

Garden Ecology

R. S. STURTEVANT

THE gardener seeks success with plants. To one, success may be a selected plant grown to perfection; to another it is a group of plants so arranged as to please the eye. In either case we must consider both the needs of the plant for varying amounts of light, air, and water at various seasons and our own requirements as to ease of culture and desired effect.

Each plant has certain periods of active growth that alternate with periods of rest. In the tropics or under cultivation activity may be almost continuous. To the far north or in certain types of vegetation the resting period is prolonged. We garden in a certain climate but we may seek to maintain optimum conditions to secure a maximum growth of flowers (and weeds) or we may prefer to make the most of what nature provides and thus limit our plant material. The gross feeders quickly overgrow their weaker neighbors despite our efforts at restraint. Hence the labor is continuous; whereas the lazy gardener (and I am one) tries to group plants that will live together as a happy family with little need of regulation.

A study of plants in relation to their habitats is the science of ecology but the grouping of plants in a selected spot of our own is wholly an experiment based on experience and observation and, incidentally, rarely successful to any large extent at the first trial. Furthermore the measure of success can be judged only over a period of years which, in itself, indicates that some control must be main-

tained as in nature many efforts are due to a transitional stage.

My interest is primarily in a maximum effect with a minimum amount of care and my ten to twenty year experience is wholly in New England though with two very different types of soil; the first a very light gravelly loam, the second a rather poor and poorly drained clayey loam. Naturally there have been areas of sun and shade, low wet spots and high dry slopes, and varying amounts of root competition of different sorts, and yet so difficult is it to analyze the conditions that I know not how to classify my experiences in a way that may prove helpful.

Over large areas cat-tails or willows, alders or larch may indicate varying amounts of wetness in the lowlands and nut trees or white pines relatively good well-drained areas but within the limits of a yard we may grow almost all of them cheek by jowl and it is the character of the individual that will permit or prevent close association of other plants for our enjoyment. A white pine may self-sow in a sunny border; in ten years it may be sufficiently bushy to crowd out its neighbors or its neighbors may have left it with only a scrawny leader that in another ten years still permits sunlight to reach the ground about its trunk. That one difference of light changes our problem completely. Again a row of elms to the south is struck by a heavy ice storm and for the next decade at least the garden to the north enjoys more sun-light.

With our objectives and our limita-

tions both in mind two general principles may be offered that are markedly helpful in securing attractive groupings. First, the poorer the growing conditions the more easily we may achieve an effect that will be permanent when once established. Second, the more varied the habits of the plant material the more interesting the composition or succession of bloom or what you will. As a reverse, probably our most difficult problem would be the keeping of a rich open meadow (alpine or otherwise) in more continuous lovelier bloom than nature could provide. We often need trees, shrubs, or vines, perennials and almost invariably bulbs to get the maximum of effect. Nature is usually far better than we are at mixing tree with tree or shrub with shrub and for a brief span of years may offer us a wider variety of plants within small area for our guidance.

A happy mixture of like material for succession of fruit or flower and without too great a contrast of texture to disturb the eye is not easy. In fact, I have had few successes. *Buddleia alternifolia* planted with a hybrid Sweetbrier has been lovely from a distance of fifty feet or more and less good when one felt the differences of foliage. I could wish for a more free-flowering rose as the lavender is only lit with pink. With me the buddleia alone is a bit floppy in habit and none too attractive as a shrub.

For color combination also but this time in poorer, drier soil, the rose of *Robinia kelseyi* rising above the white of *Rosa spinosissima altaica* has been lovely. *Kelseyi* is much lighter in foliage and sparser in increase than the usual *Robinia hispida* and hence better with the fine foliage of the Scotch rose. Both are interesting in fruit and warmth of twig.

Abelia and Japanese Quince supplement one another to advantage, the first with more spreading habit, more winter foliage, the second with its blaze of color and, eventually, greater height.

In light soil a well-established hedge of Japanese barberry makes a delightful support for climbing roses particularly those with more of the *wichuriana* fine foliage and sprawling habit. In this case the rose may smother even a vigorous barberry unless thinned. Incidentally any really hardy climber may be interplanted with Prairie roses (for succession) and Scotch or wild roses as an undergrowth but they take space and then more space as the years pass. Once and once only and in good heavy loam I had a happy mixture of Spirea van Houtte and a rose. A hybrid perpetual (for lack of time to prepare another bed) was planted between newly set spireas and forgotten. Shortly the stock took hold and some years later the white of the spirea gave way to the magenta red (unfortunately) of the rose rather pleasantly for a neglected corner.

Either by close planting or by grafting one can achieve variety of color within the same species; apples, cherries, or lilacs for example, and without sufficient differences of habit or foliage to distract at other seasons. On a larger area one may mix azaleas of similar foliage and height and interplant with ferns and bog lilies for succession of color and interest.

Curiously enough all these groupings require sun and I can think of no happy mixtures that are really effective for shade. Equality of vigor has been a necessity and similarity of foliage texture and color most desirable. What we have done is to maintain a certain mass effect in a larger composition

and yet to gain added seasonal interest.

When we group for a more complete picture we begin to think not of a single mass but of ground-covers blending into specimens of interest, the whole perhaps beneath a canopy of tree. From a distance the height of tree or vine counts while near at hand, the intricacy of ground covers may charm.

In the smallest of planting areas, and where suitable support is available we must depend on vines for height, possibly for spread as well, and for herbaceous material at their feet perhaps.

My terrace paving is set in loam. Close spacing of doors and windows offer but a few square feet for planting. From one springs a wisteria, bare at the base but festooned above and bunching heavily at the peak of a gable. At its foot is a Bearded Iris and a self-sown New England Aster which I tuck back behind the trunk of the wisteria each summer. A bit of husky sedum creeps out along the crevices between the stone. Dead flowers and leaves must be removed, the vine may need pruning away from the windows but that is all. If it were not a south exposure I should add English Ivy for winter effect.

Another corner has been less successful in its lower ranges. A wild grape ranges high and wide, some thirty feet in three directions. A Trumpet Creeper is slowly taking hold (none too vigorous in this climate) and at their base is a tuft of day lilies. Originally there were violets and daffodils also but the lilies have won the day.

Off a corner of the gray-shingled house is a vase-shaped purple plum. From below the groundnut (*Apis tuberosa*) tangles pleasantly each season, its dull purple blooms only apparent as we approach closely. Beneath and

on the sunny side a drift of Iris Dorothea K. Williamson gives more and richer purple in its season but the arching leaf blades are almost evergreen. On the shady side is Leucothoë with its bronzy new growth. The whole occupies perhaps a four foot square and practically without attention this last ten years.

When first planted, some preparation of the ground and weeding is a necessity but with luck the selected plants supplant the weeds.

A high-corner with dry walls to south and west has become a happy tangle again within the decade. A twelve foot tree lilac gives character to one side. *Rosa multiflora* and Bittersweet mound high and far, while from below a Trumpet creeper gives even bolder foliage where needed. Japanese barberry edges the group. Within the last few years a seedling grape has appeared and will need removal I fear before its big leaves ruin the composition and its vigor smother everything. What more could one want without effort: fall color, three kinds of winter fruit, four seasons of bloom!

Another corner has been less successful. It drops away from the house undesirably to start with and the soil is poor. A rather thin, tall *Euonymus alatus* arches delightfully by the window. Beneath it *Euonymus vegetus* is all too slowly making a carpet,—the poor soil which keeps the shrub in bounds is too poor for the ground-cover. To the north is a low canopy of the laciniate sumach its fall color less good than that of *Rhus glabra* of similar height. Both are unpleasantly thin at the base which I have thickened with Japanese barberry as I was not willing to enrich the soil for a mere ground cover. Grape hyacinths and bugbane have been a pleasant tempo-

rary ground-cover but my problem is still unsolved.

An existing birch beyond the lawn proved a start towards a naturalistic glade. At its foot early orange day lilies have thrived but not so well as to crowd out a planting of lungwort and English primroses. The latter self-sow but rarely need division and replanting every few years. A bit to the rear and close behind the white trunk are spires of cimicifuga, its bold foliage handsomer as the years go by. If it had not been for trees to the south I should have been using Joe-Pye-weed, Siberian irises, with my day lilies with even less culture.

Beneath alders, in drifts across a run-out field, beneath an apple, in fact almost anywhere the daffodils will at least live and, if the soil be good, increase most thriftily. Generally the Trumpets like the better loam, the narrow-leaved Incomparabilis varieties enduring light with better grace. One planting of Barri conspicuus has mingled with mertensia these last twenty years at the foot of a black locust in almost pure gravel. Only the mixed ground cover of lanium and ajuga is really happy but they do continue. *Narcissus triandrus* has self-sown both in a low spot where ferns run riot and on a sunny, gravelly bank among neglected rock garden things. *N. cyclamineus* has persevered only in the low spot. Narcissus seem to crowd themselves into extinction much more frequently than otherwise, while tulips rarely continue even with help.

On a sunny slope at the foot of an old larch, now draped in Virginia Creeper, *Sedum stoloniferum* makes a carpet through the thin stalks of a wild rose which apparently can do little more than exist in such pure gravel.

Again on a bank of gravel where a Hybrid Sweet Brier rears high, am-

sonia has settled in to stay and rises from a heavy mat of wild ginger and an occasional tuft of epimedium.

In using perennials for permanence it must be remembered that some are naturally short-lived, some very slow of increase, some easy from seed, some quick runners either above or below ground so that they may never get a hold or may usurp the whole neighborhood. Lily-of-the-Valley in shade will weave itself through thin grass and with little help become a solid mass while the uvularias of similar habit stand little competition. I have a happy colony under a dwarfish pine but as they edge out into the sun they are too easily crowded out. Goutweed (*Aegopodium*) either plain or variegated advances slowly but very surely and in moderately good soil will swamp most herbaceous material though it does no harm to deeper rooting shrubs. The common ajuga, moneywort, and ground ivy all run madly for light, they like sour spots in the lawn but not too much shade or any crowding while vinca and pachysandra will thrive even under a thrifty forsythia.

Our associations of plants always need ground-cover to prevent the growth of weeds. It may be relatively low or relatively tall, it may be shallow or deep rooting as its companions permit, it may be sun loving or shade enduring, but unless we realize habits of growth below ground as well as above and balance periods of active growth with periods of rest we cannot succeed in a close planting.

In a pasture we find a spreading juniper in full sun. As the years go by its center thins, active growth is above and on its perimeter. A seedling birch, rose, or cedar finds foothold and develops shade and with the increase in shade the juniper dies away. To the south side it will remain ef-

fective for many a year. The low yew (*Taxus canadensis*) is equally low and spreading but it will stand a lot of shade and form a carpet close up to a tree trunk in good soil. There, our difficulty is to provide shade before the hot sun burns into ill-health. It will mix most attractively with *Euonymus vegetus* but it would stand the smother of a forsythia as poorly as would the sun-loving juniper.

The problems presented by a row of trees to the south are intriguing to say the least. A row of thirty year old white pines, only ruined in places by quick-growing ash and maple is solved only in part. Each year they become thinner at the base and yet I need a screen. I preserve existing low branches by encouraging ground-covers of periwinkle and aegopodium; hemlocks have been inserted here and there; hornbeam and buck-thorn thrive but are none too thick in winter; forsythia and Tatarian honeysuckle take advantage of every ray of sunlight; rhododendrons are none too happy as they are as shallow rooting as the pine and at best I would be getting little color on my north side; some ferns are thriving though few like a mulch of pine needles. Until my pines get high-branched I am out of luck except where the plan permits planting out from under them.

Another row is that of old elms—street trees—and again a screen in a limited space was desirable. Here, in time and with feeding, many a shrub continues to thrive even after two decades. But though they thrive, they

get higher and higher and more and more leggy at the base. Lilacs without bloom, *Philadelphus grandiflorus*, hawthorns, *Cornus alternifolia*, and Marsh bush honeysuckles all serve their purpose but only forsythia and the hydrangeas *radiata* and Hills of Snow, Kerria and xanthorhiza fill the lower ranges of my screen. Beneath all these the weedy *Viola cucullata*, *Aster multiflorus*, and *polygonum* ramp. There are occasional patches of pachysandra and vinca but the mulch of leaves left in from year to year are helpful to neither

Close to the north of the house where the sun comes for but a late hour, a place shaded also by a vigorous young maple I have watched even more than I have planted. An oxydendron, small but thriving is brilliant in autumn color; Tiger lilies and Japanese barberries self-sow and spread most gracefully; there are ferns and ginger and lots of moss. In another equally poor spot handicapped by shade from both the house and an elm tree, *Euonymus alatus* is taking hold; there are elderberries, wild grape, honeysuckle and thimble berries, all so thin that I can get a carpet or hosta, ferns, *Phlox divaricata*, Jack-in-the-Pulpit and vinca to mention but a few of my successes. *Podophyllum* is grand but, when thick, gives almost too much shade for many companions of smaller stature.

If you like my haphazard methods study nature but study also neglected plantings in your vicinity and set as your objectives not masses of bloom but decorative arrangements of foliage with or without flowers that will be of seasonal interests.

Sun Roses and Rock Roses

SYDNEY B. MITCHELL

It is often said that the garden is a reflection of one's personality, or some expression of it. May there not, however, be occasions when it reflects even more the conditions, physical and climatic, even financial, under which said personality may be horticulturally expressed? Must my addiction to drought resistant shrubs be considered the expression of some personal characteristic? I think that it came rather with the acquisition of a large garden on a hillside which in a California summer drought of six months it would have taxed my resources to irrigate. Perhaps, too, it may reflect my feeling with advancing years that it is best to make an ally of nature rather than fight her, a feeling which leaves me cold to the attractions of *Mecanopsis Baileyi* or of rhododendrons but gives interest in trying out shrubs which come from conditions somewhat like my own. For an understanding of my interest in sun roses and rock roses among other drought resistant shrubs, let me briefly describe my garden.

It is located in the Berkeley hills which rise from the eastern shore of San Francisco Bay, going as high as 2,000 feet. Most gardens are on the western face but mine happens to be just over the ridge—a couple of miles north of the University of California. It faces east at the 900 foot level, looking down into Wildcat Canyon. The grade varies from 10 to 20 per cent. The soil is a heavy loam a couple of feet deep overlying clay, but the slope affords excellent drainage. The annual rainfall is about 22 inches but varies considerably. It all comes between October and May, the summer

being without moisture except from the high fogs common in July and August. In an average winter the greatest cold is rarely over 6 degrees of frost, but in 1932 and 1937 it was much colder, this year as low as 18 degrees above zero in January. Summers are so cool that the wearer of a straw hat or a linen suit is at once marked as a stranger in our midst. Overcoats are common wear in summer evenings.

I have about an acre in garden. Only a small area around the house, which is in the upper part of the southern third, is watered and cared for in summer. The northern boundary of Monterey pines, Monterey cypress, toyons, madrones and California live oaks makes a green background for drought resistent shrubs which face southeast. As far as sun, drought, and neglect go they must be able to take it. I am willing to water them occasionally the first season, after which they must take care of themselves. There are a couple of long paths from the house north; these like cowpaths on a hillside are so cut into the bank that their upper margins are high and their lower one drop off below the paths, presenting problems of planting. Furthermore I should add that the flowering period of the whole cultivated area excepting that part immediately around the house is in our spring, from February to May, and that the main effects then, apart from sun roses, rock roses and brooms, comes from flowering fruit trees, from daffodils and irises.

The helianthemums or sun roses came first into my ken because my

previous California garden was a smaller one on a dry sunny slope and these evergreen shrublets filled a need in covering the steeper grades due to the formation of terraces. These were what are generally listed as *Helianthemum vulgare*, though the variety of leaf size and color and the diversity of habit would certainly suggest a hybrid race. I found only a few varieties in our California nurseries of a decade or more ago, and these without names. All were single with little rose-like flowers an inch or less across, mostly pinks, but from Carl Purdy I got a nice apricot form with larger flowers and heavier, glossier foliage. I had learnt that they were readily propagated by inserting in sand, preferably under glass, the somewhat ripened tips of branches which were produced after flowering and which were ready to become cuttings by July or August. I also knew they came fairly well from seed, in fact they occasionally self-sowed in my garden but without interesting variation.

Then in one of the English gardening weeklies I saw an account of a visit to the garden of an old Scotchman, John Nicholls, who by seeding and selection had developed a fine lot of these helianthemums. Knowing the practical impossibility of importing plants I wrote and asked if he would part with some seed, and by return I received perhaps half an ounce for which I made return in dahlias. It was fortunate that I acted at once as he died the following spring. From this seed I raised hundreds of plants to cover a steep slope caused by a fill, and after ten years many of these originals persist and paint the grade with white, pink, rose, deep red, apricot and bronze every morning in late spring. Mr. Nicholls had apparently named his best seedlings after Scotch

mountains, like Ben Nevis, and this Ben series is now occasionally represented in Pacific coast lists such as that of William Borsch, Maplewood, Oregon. From my seedlings I selected a few quite different ones for propagation, emphasizing size and clearness of color. Some of these are offered by Victor Reiter, Jr., of San Francisco. I called them after colleges, a big pure white Notre Dame, my best red Harvard, and on the recent occasion of one of my students becoming librarian of Wellesley I named a nice apricot pink after that college: it has the very valuable habit of holding its flowers far into the afternoon when all others have dropped their petals.

In the Journal of the Royal Horticultural Society I noted that several years ago in the trials of helianthemums the awards were about equally divided between John Nicholls' and W. M. Christy's varieties, the latter apparently being stronger in yellows and oranges. I found that Mr. Christy was a member of the Iris Society and so wrote offering to trade him American irises for some of his selected seed. From his English seed I raised further batches of plants and got the best deep golden yellow I have seen, naturally naming it California. He also sent plants to a friend of mine in Vancouver, B. C., shipping them in soil as is possible under the Canadian regulations. After they recovered from the voyage they were propagated and so I have a nice series of named ones, including the lovely clear yellow Goldilocks, Jock Scot Improved, and Jersey Cream. For a park in Seattle I got cuttings of a fine big chocolate bronze which I am told is Fireball though it is a single and I find that name applied quite often to a double red. From various sources I have picked up several double forms which have the ad-

vantage of holding their petals longer than the usual morning; otherwise they have less merit than the singles in my eyes. Besides being useful to cover banks I find sun roses fine to edge paths as they don't resent being occasionally stepped on. All this late April and May they were patches of the most brilliant and lovely color in the garden. After flowering they ought to be trimmed back to remove seeds. I don't prune them enough. One winter the rabbits from Wildcat Canyon did it for me, and the show of flowers next spring was grand.

These common sun roses are hardy in many parts of the United States, certainly in gardens on both coasts, but the taller, comparatively unknown shrubby species from around the Mediterranean are likely to go out in winter colder than those of England. Some will however take a good deal of frost, as I noted from Vancouver gardens this summer. *Helianthemum lumenatum* is a small cushion of evergreen leaves with bright yellow evanescent flowers. My plant is in what might be generously called my rock garden where it thrives but is not very conspicuous. I prefer *H. libanotis* (syn. *H. rosmarinifolium* and possibly *H. alyssoides*), a small, slow growing upright shrub of perhaps 18 inches, covered in its season with dime size yellow flowers, and the somewhat similarly habited *H. umbellatum*, with comparable white flowers. Both do easily in the aforementioned rock garden with no care but occasional watering from adjacent lawns. The others I grow are real shrubs. The best, I think, is *H. formosum* (syn. *H. lasianthemum*), a plant of somewhat horizontal habit often developing into a shrub four feet across and about half that height, its gray foliage almost covered in spring by its daily replenished crops

of bright yellow flowers, each dotted at the base with a dark brown blotch. My original plant came from Golden Gate Park, but I raised from Mr. Christy's seed a form with lighter brown blotches and by great luck found the self-yellow form among the seedlings, usually dubbed variety *concolor* or *unicolor* in English catalogues. The taller, more upright *Helianthemum ocyoides* (syn. *H. algarvense*) differs from *H. formosum* also in that the brown blotches at the base of the petals so run together as to form a ring. This species is certainly less hardy as well, in fact a few branches were killed in the recent cold winter here but it is recovering quite well. Not unlike this is *H. halimifolium*, but its wider foliage is very gray, it is more compact though as tall, and flowers are even later and of a little paler yellow. All these are shrubs of the easiest culture, drought resistant and readily propagated by cuttings in their proper season, late summer or early autumn here. So much for my sun roses.

In the old botanical gardens opposite the University of California Library in Berkeley I remember seeing some species of cistus or rock roses growing years ago, rather dry looking shrubs with small white single rose-like flowers under such names as *C. salvifolius* or *C. monspeliensis*, and some others with lilac or magenta pink flowers labelled *C. villosus* or *C. albidus*. I gathered that they formed a large part of the mesquite of the north Mediterranean littoral, the underbrush which corresponds to the California chapparal but differs from it in being aromatic. A winter trip to southern France some seven years ago and a meeting later in England with Sir Oscar Warburg aroused my interest in this family of tough, drought resistant shrubs and since then through the

kindness of English friends I have raised most of the species from seed and in one way or another secured several of the hybrids. They all come quite readily from seeds and in California if set out from the flats in spring while they are still small they establish very easily, but thereafter move very badly. Nearly all of them root quite easily from cuttings of the current season's unflowered growth, best started in sand under glass in late summer or early autumn. By far the best description of this family is that of Sir Oscar Warburg in the Journal of the Royal Horticultural Society, January, 1930.

I have flowered most of the species but unless one has a large garden many can be dispensed with as too much alike, crude in color or surpassed for garden effect by some other species or hybrid. From a gardener's standpoint the rock roses may be divided into those with pure white flowers, those with white flowers with red-brown basal blotches, and those which are some shade of pink or rose. While I have grown the smaller white-flowered *Cistus monspeliensis*, *C. salvifolius* and *C. populifolius*, if I had place for but one of these smaller pure whites I would certainly select *C. corbariensis*, a hybrid of *C. salvifolius* and *C. populifolius*, fairly compact and dwarf, perhaps two feet high, with rather pleasant green foliage, very attractive bronzy pink buds in clusters, and nice white flowers in countless numbers in spring. To get this true it must be propagated by cuttings, as seedlings very considerably in height though otherwise a great deal like *C. corbariensis*, which gets its name from the town of Corbiers on the French Riviera. Of the taller pure white forms *Cistus laurifolius* is best known and considerably hardier than the smaller whites, for I saw it thriv-

ing outdoors both in England and in Victoria, B. C. Its laurel-like foliage is a bit funereal particularly in winter and its stiff, upright habit suggests that it is the puritan of the family, but in early summer when it is crowned with clusters of rosy buds which open into large pure white flowers it seems quite worth growing. It is reputed hard to propagate by cuttings, but I can't write of this from my own experience as I raised all my plants very readily from seed. The only true species with white spotted flowers is *Cistus ladaniferus*, a tall, rangy narrow-leaved shrub, the stems covered with the gum ladanum which gives it its name and makes it unpleasant to handle. I doubt if the real thing is to be found in American nursery catalogues, though it is now obtainable. Most growers offer under this name a hybrid, *C. cyprinus*, which I will discuss later. *Cistus ladaniferus* has only a single flower in each head and is so readily distinguished from its hybrids, its flowers are large, often five inches across and in the type are pure white with red-brown spots at the base of each petal. Out of some seed sent me by Sir Oscar Warburg I got not only the blotched type but several plants of the pure white "immaculata" form, with flowers so large as almost to suggest *Romneya Coulteri*, the Matilija poppy, though it lacks the golden center which makes the latter too suggestive of fried eggs. This pure white form has the peculiar capacity of carrying its flowers for two or three days when all other members of the family lose theirs the afternoon of the day they open. I grow two white hybrids of which *C. ladaniferus* is one parent, *C. Loreti* and *C. cyprinus*. The latter is a broader leaved rock rose than *C. ladaniferus*; its other parent being *C. laurifolius* it is much hardier than its spotted parent,

which probably accounts for its frequent substitution. It can always be recognized by its heads of several flowers and, if you grow it long enough, by its tendency to die young, in spite of which I do not think it as good as *C. ladaniferus*, though its hardiness and compact habit may fit it for colder or smaller gardens. It comes very readily from cuttings.

The older pink species, *Cistus villosus* and its varieties and *C. crispus*, are hardly good enough for choice gardens but are grand to clothe dry hillsides with evergreen foliage so dense that it keeps out all weeds. *Cistus villosus* and its variety *C.v. creticus* are much alike, rather sprawly, grayish green, a couple of feet high, with flowers of a self-lilac pink of which I am not fond. *Cistus crispus* is much better in habit, hugging the ground, and its deeper green crimped foliage is less dry looking, but whether you prefer its smaller magenta green flowers depends on your reaction to that color, which I would call a rosy red if I were trying to sell it. Both these species hold their seed pods too long. A much daintier pink is *Cistus parviflorus*, with, as its name suggests, small flowers, but they are of a nice pale pink and appear on two foot plants of such gray and pleasant foliage as to be in keeping. I have found it hard and slow to raise from cuttings, but not impossible; from seed it is easy. The best pure pink rock rose is the natural hybrid, Silver Pink, from Hillier's nursery, Winchester, England. It is reputed hardy anywhere in England, but as it only got into commerce in America this year I cannot report on its behavior anywhere but in my own garden. I had coveted it for years and finally found a friend in Vancouver,

B. C., who imported it from England, propagated it and sent me four plants under the U.S.D.A. permit which allows of bringing in plants with soil on the roots from contiguous countries. From my plants Victor Reiter, Jr., propagated the stock now offered by the Armstrong Nurseries, Ontario, California, and others. It has proved a medium-sized shrub of grayish green foliage and single rose-like flowers of a perfectly lovely shade of silvery pink. I am a little concerned that it may not be long lived at least under my conditions, but I am giving it an occasional summer watering as the plants which have done best are in a mixed border which gets casual irrigation. The other pink hybrid recently offered by California nurseries as a novelty is *C. purpureus*, a chance plant found in France over a hundred years ago which has been in English gardens for decades. One of its parents is doubtless *C. ladaniferus* and the other probably a form of *C. villosus*. The plant in foliage and growth is somewhere between them and its large rosy crimson deeper blotted flowers are attractive to most gardeners. It doesn't seed with me but comes cheerfully from cuttings in late summer and is strong and healthy, in fact, I have never lost a plant and in Victor Reiter's San Francisco garden there are large old plants six or seven feet high, very bright and gay in early summer and with occasional flowers later.

My apology for interest in these evanescent flowers is that under my conditions they are cheap, gay and easily pleased ground covers, and with little labor, less strength, and more land than I should have in garden they serve a purpose similar to that of my other drought resistant friends the brooms.

Iris in the Garden, 1937

SHERMAN R. DUFFY

No one knows and realizes any more thoroughly than do iris growers that you can talk about the weather and tear your hair and wring your hands but that is all you can do about it. The weather in the last year has done plenty to us here in the middle west with the result of the most tremendous losses in plants in years and about one-tenth of a crop of bloom in many gardens this season.

But, by way of compensation, the bloom this season was of the most magnificent quality we have enjoyed in many seasons and we learned what the irises can do when they really do their best. They showed everything in the way of height and size and frequent heavy rains and gales of wind tested their enduring quality to the limit. We found out those that can stand up and those that cannot which is valuable knowledge.

Last summer's searing drought, the worst we have known in years, checked the usual late summer and fall growth. Many plants made no increase at all and produced no side shoots until this spring, the fall rains in many sections coming too late. With no anchorage of the usual new roots, we found many irises lying on top of the soil this spring. After the drought came a winter with a solid coating of ice over everything for weeks at a time. The irises that survived we can tab as the iron clad and there were many surprises in those suspected of being tender, such as Purissima, standing up better than some of the old timers we felt nothing could freeze.

After a depression iris moratorium of two seasons we sallied forth again

for to admire and for to see and the two years vacation from viewing irises seemed to have been valuable in giving a new and cold perspective,—that is we were looking at them with no predisposition or predilections of the previous season to affect judgment.

To me, the most striking and interesting feature of the season was Hans Sass' new series of blended plicatas of the old King Karl-Jubilee type brought up to the size and height of other giants of the iris world and with more vivid and intensified coloring. This accomplishment was particularly fascinating as I knew that both Hans and Jacob Sass had worked for years to carry this type farther but had been unable for several years to accomplish anything at all with them. Hans told me four or five years ago that he hadn't been able to get anywhere with this type. Both brothers have worked for at least ten years on them and as Jacob remarked, "Hans beat me to it."

It struck me as a *tour de force* of iris breeding and Hans was reluctant to tell just how he did it except to say that he had to do several years of criss-crossing and breeding around corners to produce them. He now has a series of a dozen or so. One, Siegfried, has been introduced, a giant in size and more than 3 feet tall, an intensified King Karl in coloring, the standards having a fine yellow ground but the ground color of the falls being a creamy white with heavy stippling and suffusions of brown purple.

Orloff, if I got the name correctly, I liked even better than Siegfried. It has not been introduced, a beauty, in general effect a soft brown, which

would plant beautifully with the medium toned blues or with the pinks. It is big, but not so large as the giant Siegfried. Neither was it in the single plant I saw so tall, Siegfried being around 38 inches but it was not as strongly grown a plant and may make better height and size. They should make beautiful companion pieces to Jacob's fine series of big blue trimmed plicatas and to Hans' fine pink trimmed ones.

Maid of Astalot, a new plicata introduced this year by Jacob, is a Los Angeles type with much deeper and more brilliant coloring on the haft, a fine thing.

Next in interest was Morocco Rose, the first real advance in pinks that I have seen or heard of since Pink Satin. The latter was in the finest form I had ever seen it this year. Other sister seedlings of this Trostringer-Aphrodite cross such as Pink Opal were equally fine but Pink Satin is the pinkest of the lot and the only one of the series with good branching displayed this season the best I have ever known it to be. The sister seedlings are all typical pallida stalks.

Morocco Rose, which Dr. Loomis has given us is far and away the biggest pink yet shown. It comes close to being a rose pink and deep rose pink bicolor of the Ridgway chart. It should rate well up in the 90's. The only criticism that could be made of it and that would be a carping one is that it is a little bunched and high branched, but one can't expect perfection reasonably.

It stands out as the premier pink. I should say, with no rival for size or color so far reported. Apparently, it is a strong vigorous grower as Mrs. Pattison had it both in her display garden and in the field. The open field stalks were better than the display gar-

den ones, showing that it does not need any coddling. It was one of the most admired things in her garden this year where an amazing variety of new and dazzling irises were shown. It has come through a two-year test in her garden under most adverse conditions unscathed and in a season where she suffered tremendous losses due to the drought and ice coating of the winter.

The stellar attraction in Mrs. Pattison's garden and one of the most outstanding irises I ever sighted was a new yellow seedling under number, 142-2, from the garden of Mr. Howard Glutzbeck, of Lynbrook, N. Y.

It looks like the daddy of all the yellows to date.

While I have always believed that it was the best policy to rate a new seedling as conservatively as possible and increase the rating if the iris merited it after a trial of a season or two, I couldn't give this seedling less than 98 and that on suspicion, as I couldn't finger any definite defect. It seemed to me to be distinctly better than Happy Days to which it is closest. It is a little deeper in color and a little more perfect in form with a better branched, in fact a beautifully symmetrical stem, and is nearly as large and when established may be as large as that giant.

A specimen stalk of Happy Days which was the outstanding one far and away and got the unanimous verdict of the judges at the Freeport Iris Show was the biggest iris ever displayed at Freeport with two enormous blooms.

The new seedling had one distinct advantage over Happy Days that was made plainly evident. The two were growing in direct competition within a few feet of each other, the Happy Days specimen not being as well grown as some of the field stalks, but both irises had to withstand a heavy rain followed by a gale of wind. Mr.

Glutzbeck's wonderful iris stood up through it all unscathed while Happy Days was a most unhappy looking iris after it. It just folded up and collapsed.

It was a yellow season, getting to a point where you heard visitors saying, "Here's another yellow." And they are all excellent, mostly quite distinct and none that seem to duplicate each other—a wonderful selection.

Prof. Mitchell's Naranja was probably the richest colored of all the yellows, but of a distinctly orange tone, a brilliant and beautiful iris that will be a fine garden plant when stock is sufficiently increased for general use.

The most brilliant, rich, clear deep yellows were Golden Hind, a gorgeous gold; Golden Bow, and an unnumbered seedling from C. G. White of good size and seemingly the richest yellow of all the big fellows I have seen.

Hans Sass' intermediate, Golden Bow, bloomed right through the tall bearded season and was a glowing clump that attracted much attention. Crysoro, Col. Nicholls' fine intermediate, is close to it, but in my garden was not as rich a yellow.

Mr. Grinter's Jubilestra, which the originator says has other blood than iris in it, but what is not revealed is an unusual plant of fragile appearance and silky texture, but apparently is not as frail as it looks. It is curious and attractive. I should like to know about its parentage, there being a rumor that a *hemerocallis* figured in it, which sounded like a nature fake to me.

Mr. White's Lucre is another fine yellow of rich color, one of the deeper sorts that we need in the great flood of pale ones.

Of the creamy ones, Bob Schreiner's Golden Treasure was the finest thing shown and the best all around iris in perfection of finish that he has

so far put out. It is in the series with Col. Nicholls' Sunnist and Snow's Attye Eugenia. It has an exquisite glittering texture the rich yellow center which melts and blends into falls and standards, giving a beautiful glowing effect. It is a flower of fine size and poise with a nicely branched stem—one of the really good new things.

His Capri is also good, a fine yellow and brown bicolor, the standards a fine warm yellow of good carrying quality with the falls of golden brown.

I noted only one new blue, another from the Iowa Garden of Mr. Shuber, Television Blue, of Corrida coloring. Mr. Shuber has put legs and arms under Corrida, Harmony, and Wedgewood in Television Blue, Dymia, and Narain and has given them the size of the modern irises. The old timers were and are still as good as the best in their respective colors which are reproduced in these three tall, large flowered, well branched newcomers.

Shining Waters was again outstanding as was Missouri. I prefer Shining Waters to Sierra Blue, the latter deeper and larger.

Grinter's Garden Magic and Jacob Sass' The Red Douglas looked like the last word in reds, both magnificent productions. There is very small stock of both up to the present. Garden Magic may be a bit the larger of the two, a seven-inch bloom of a lustrous deep red self-coloring of unusually smooth texture and finish, the falls velvety and there being very little venation on the haft. A rich orange beard adds to its brilliance.

The Red Douglas is darker than Garden Magic, in fact, the finest dark red I have ever sighted with a fine stem, widely branched and with big flowers. It is the finest of the reds Jacob Sass has turned out and he has had a lot of them, a gorgeous bit of

color. Somebody liked it intensely in his garden as he complained that several plants were missing from his meager stock one evening.

From the Thomas garden in Utah comes a red newcomer, Piute, an unusually clear red. It is suggestive of a larger, taller and more intensely colored Numa Rumestan.

Mr. Lapham's Red Sails is a handsome brown and rich red combination of brilliant garden effect, making a blazing display of fine height and stem. He also had a tall pink blend on display and has a number of fine pinks on trial.

Hans Sass' Midwest Gem was the finest new blend on view at Freeport, a dainty and handsome combination of fawn, pink and yellow, suggestive of a much refined Rameses in paler tones. It has fine height and branching. Kleinsorge's Far West, another new blend, is a nice indoor iris along the K. V. Ayres type, but too soft and dull of coloring to register well in the garden.

In the whites, we had two newcomers on view, Dr. Waller's Our Lady of the Snows, and Dr. Ayres' Cincinnati. It did not strike me that either added much of anything to our present list of whites. Hans Sass' Snow King, Jacob's Crystal Beauty, and the Dykes Gudrun were my favorites and Crystal Beauty this year I thought even better than Snow King, although not so large, being the snowiest of the whites with good height and branching.

On the stalk of Cincinnati in Mrs. Pattison's garden, I would not agree with Dr. Ayres that it was any improvement on his very fine Venus de Milo, which has seemed to me to be as good a white as anybody could ask for. It is taller.

Showing that you never can tell just what an iris may do in the course of

its career, Jacob Sass' Wambliska, the big blue-tinted white, staged a magnificent comeback this year, both in my garden and others. It didn't seem to like me, but this year it was as magnificent and stately as it was the first time I saw it in Jacob's Nebraska garden several years ago when it showed a near four foot stalk of magnificent bloom.

Mr. Sass says that Wambliska, from a breeding standpoint, is the most dominant white he has ever encountered. No matter with what he crosses it about 20 per cent of the seedlings are white, some warm white, some cold white, all depending on the other parent. He has scores of whites as a result of numerous Wambliska crosses.

"How would you like fifty white irises?" he asked. "I've got all of that many and still some."

Deseret and Vision still seem to be the top flight of the newer variegatas. The former has the finest clear, glowing yellow standards, and the latter the better falls, but Deseret is the taller and larger and stands up well. Vision this year seemed to show weak stems under the gales, but there were few irises that didn't. Vision has slightly clouded standards.

It is a moot question as to what a true variegata really is and whether clear standards are a characteristic. Bob Schreiner calls attention to the fact that the variegata species which he has and which he imported from authentic sources has clouded standards.

The last color break I noted in the falls of variegatas was Williamson's Decennial, which I still consider one of the handsomest of the lot. The one thing we haven't is a good variegata with blue purple falls instead of the usual brown red, at least I haven't found one listed anywhere.

The cold late spring seemed made to order for the intermediate and dwarf iris. They also seemed to stand the rigors of the drought and ice far better than the tall bearded iris. The daffodils, too, liked the climate, and made a glorious display lasting into the intermediates when the late tulips took up the picture. A number of the intermediates bloomed well through the late iris season. They produced taller stems than usual and more lavish bloom and are worthy of far wider planting than they have had.

There are no finer yellows in the whole iris race than in these intermediates, ranging from Golden Bow, Crysoro, through Cyrus, and Nymph to the pale Ambera. Alice Horsefall and Challenger in their dark rich beauty I would not be without, and the rich red purple of Red Orchid and the bronze Abelard are things of rare beauty. They prolong the large flowered iris season for two weeks and lend themselves to grand garden pictures for early spring.

The newer dwarfs which have real falls and good form and better stems than the old timers make gorgeous foils for the daffodils and they flourished marvellously this spring.

The furor of collecting seems to have passed to a great extent among middle western gardeners and the study now is for the garden effects to be produced with the irises which furnish such lavish and exceptional material in their season. The day of the dull colored iris seems done, no matter how big or tall it may be. Cleaner, clearer colors are the rule in the newer introductions that are pushing out many fine things of former days that we once admired but now cannot admire so much.

We didn't see the usual viola and johnny jump up ground covers to any

extent this year as the ice got them as it did many other perennials during the winter. The pinks also suffered heavily and many fine edgings of dianthus were lost and will have to be replaced.

The variegata and brown reverse hemerocallis is becoming a favorite garden combination seen in several places. It is effective and handsome, one of the most attractive noted being King Juba, one of the very best all around garden value variegatas we have because of its solid red falls and clear colored tan standards with Numa Rumestan which picks up the color of the falls perfectly. Shirvan is also gorgeously used in combination with the hemerocallis.

A big group of meadow rue as a background for some of the big plicatas was a most handsome and effective group. The medium blue toned blends are also fine in this planting, such as President Pilkington, Dolly Madison, Anne Marie Cayeux.

The freer use of yellows, now that we have them in great variety has added brilliancy to the garden. Mrs. Pattison's show garden was unusually brilliant this year because of the free use of yellows. She also favors the free use of blue selfs such as Shining Waters, Sierra Blue, the Shuber blues, Sensation and others which are a most effective note.

Old clumps of that ancient perennial, fraxinella or dictamnus, offer a grand background for the blue-toned irises as well as whites. This is a long-lived perennial with handsome foliage the whole season. It makes a handsome low hedge and is covered with bloom during the iris season. Although an old-fashioned plant it is seldom seen.

Pyrethrums are lavishly used, the

pink and whites with the blue-toned irises.

The pink-toned blends such as Spring Maid, Hermene, Day Dream, Midgard, Rameses, Frivolité, Marquise and others with the red toned irises, such as Dauntless and Indian Chief, make fine garden pictures.

Hemerocallis in clear yellow with the blazing red blends of the type of King Tut, Spokane, Junaluska and others are especially effective as are also the soft yellow irises. One of the finest of these soft yellow irises is Phebus, a fast increaser and fine grower.

The brown-toned irises such as Jean Cayeux, Tint o' Tan, Summer Tan, and others seem to plant effectively with both the pinks and medium toned blues.

Some of the dull blue purple bicolors seem to enliven and enhance the red blends most effectively.

A scheme employed with fine effect by some gardeners is a ground color iris dotting plants at regular intervals over the bed and filling in with harmonizing irises.

Combinations of the bright light blends offer fine play for the ingenuity of the planter. A handsome group noted consisted of Elsinore, Jean Cayeux, Cameo, Phebus and Rusty Gold.

For a fine yellow mass, Coronation will take a lot of beating. It has something on Pluie d'Or, also fine for the purpose in being faster colored.

Joycette, over a space of several years, has proved the most reliable and free blooming of the red purples I have tried. It has never failed.

Ella Winchester was one of the finest of the newer red-toned irises this year. It is much better than Red Radiance in general effect and Red Radiance still remains one of the fine red-toned irises.

Another fine red-toned iris in superb form this season, the best it has yet shown was Ethel Peckham.

The tallest and biggest iris for a yellow effect seems to be that excellent mauve bicolor, Henri Riviere. It was superb this year.

For brilliant garden effect, Lux is hard to beat. It stands out all over the garden in its gold and soft red tones. It is a fine grower and free bloomer. Talisman, as a lower companion piece, is excellent.

Alta California so far is the tallest, moderate priced clear yellow. It outdid itself and is worthy of lavish use.

The Black Douglas was a magnificent dark group this year. Black Wings was also excellent and produced fine stalks. It is not so tall or large as Douglas.

Dog Rose, which I had never regarded as highly as some, made a beautiful mass of color this year. It is effective in mass although individually the blooms are of poor form.

Trail's End again proved a brilliant garden effect. It is deeper and more intense in carry than Mary Geddes. I saw this happily planted with a pale blue iris that I didn't know.

Mary Dynes, named by the late Euclid Snow in honor of our garden club diva, makes a sumptuously rich clump in velvety, almost black and tan. It is something on the order of El Tovar, with lighter standards.

Burning Bronze and Directeur Pinelle look like about the finest of the dark bronzy and coppery reds. The latter is the larger, taller and darker, a very fine thing. Burning bronze is the brighter in tone with better carrying quality. They are entirely distinct in the dark range.

Coralie, Midgard and Venus de Milo was a striking group noted.

Cheerio and Spokane are two of the

blazing gems of the garden. Give them a strong yellow companion and it's the focus of the garden.

There is an increasing use of the handsome lilac species with the iris, the *vulgaris* hybrids going out of bloom as the irises come in. Noted in Freeport gardens were fine specimens as background for the irises. One of the finest of these in my own garden has proved to be *Syringa tomentella*. *S. reflexa* and *villosa* are others.

Another fine iris companion in the shrub line is the beauty bush, *Kolkwitzia*, and the weigelias. The low-growing philadelphuses are also excellent.

Blackamoor is one of the most rampant growing irises. Its big dark-blue purple blooms are lavishly produced. I saw a group of it with dark red Oriental poppies that made a striking effect.

The old dame's rocket, *Hesperis matronalis*, which has all the intrinsic beauty of a radish in bloom, is a valuable adjunct to the iris garden stuck in inconspicuous corners as it fills the evening air with spicy fragrance.

Jacob Sass' Dore, with its yellow standards and white falls made an imposing four-foot clump for me. It is an unusual iris in its color combination and is a big one. Its fault is too high branching.

Blue Velvet and Black Wings were runners up to Happy Days for the best specimen stalks at the Freeport show. Blue Velvet retains its place as the richest of the deep blue purple Dominion progeny and was superfine this season. Its closest rival was Royal Beauty in this color range.

Dr. Kirkland's Violet Crown is about as perfect in form as can be found. It is one of the really great all-time irises. A block of it in Mrs. Pattison's garden was magnificent.

Jasmania, from Dr. Ayres, is one of the very good new yellows of fine garden effect, of finely poised and balanced stalk with nicely placed bloom. There is a faint lavender shadow in the falls, barely perceptible this year, making it in effect a fine big light yellow. It apparently is a strong grower and free bloomer. A clump of it was much admired. It has a luminous effect. It looks like one of the real topnotchers of the series of big yellows.

Dr. Loomis has a handsome unintroduced seedling in Mrs. Pattison's garden of Spring Maid x Chromylla parentage. It is too near to Spring Maid to introduce, according to Dr. Loomis' idea, in which he is probably correct, but the inherited undertone of yellow from Chromylla makes it a little brighter than the handsome and delicately beautiful Spring Maid. His yellow Eilah ranks up with the topnotchers after three years' test.

Visitors to Mrs. Pattison's garden over the show week end were disappointed in not seeing Mary Lee Donohue, the highly praised eastern yellow. We got a view of a rich yellow bud, but that was all. It apparently is a very late bloomer.

Speaking of yellows, the Cayeux Ecuador is one of the real reliables and of beautiful color and texture. Its ruffling and velvety falls make it distinct from all other yellows. It has been a sturdy grower for me.

The late Euclid Snow's brilliant variegata, one of the tallest of its type, Perihelion, I hope may be introduced. It is a strikingly handsome iris.

Lady Paramount again showed crooked stems.

Hemerocallis blooming with the irises are Apricot, Dr. Regel, *flava*, *flava major*, Gold Dust, Graminea, Orangeman, Florham and Sovereign.

Training the Kwanzan Cherry Tree

PART II

W. E. WHITEHOUSE

In the April, 1934, issue of THE NATIONAL HORTICULTURAL MAGAZINE, training methods to employ in the early life of the Kwanzan variety of Japanese flowering cherry tree were illustrated and discussed. The development of the head of the tree to the desired height, the selection of lateral branches to form a scaffold framework, and the question as to their proper spacing and distribution along the main trunk of the tree were taken up.

In the present article, attention is focussed on the number of scaffold branches necessary for the formation of a tree of desirable shape, the care needed in controlling their subsequent growth so that at all times they are well balanced with one another and, finally, in the case of the more popular modified leader type of training, the proper development of the secondary whorl of scaffold branches which will eventually constitute the upper part of the tree.

NUMBER OF SCAFFOLD BRANCHES NEEDED TO DEVELOP A WELL FORMED TREE

Shortly after growth started following planting, the whip-like trees were de-shooted leaving three, four, five and six shoots as prospective lower scaffold branches in addition to the one

destined to become the leader. Varying numbers of scaffold branches were selected, care being taken that they were well spaced and uniformly distributed around the main trunk of the tree, in an effort to determine later the number of scaffold branches needed to develop a well formed tree. The de-shooting, subsequent growth that season and type and amount of pruning given the trees the following spring were illustrated in a previous article on this subject.¹ The amount of wood removed after the first season's growth was negligible, but records of one year wood removed after the second, third and fourth season's growth are an accurate measure of the amount of pruning necessary as the number of lower scaffold limbs left increases in number.

Table 1.

with each succeeding year there is a sharp increase in the number of cuts necessary for the proper training of the tree and that an increase in the number of cuts goes hand in hand with the greater number of scaffolds, and (2)

Study of this table shows (1) that that after the third growing season the one year wood removed from the tree with the three main scaffolds is considerably less in amount and of a

¹Whitehouse, W. E. Training the Kwanzan Cherry Tree. Nat. Hort. Mag., April, 1934.

TABLE 1. Amount of One Year Wood Removed in Early Training of Kwanzan Cherry Tree to a Modified Leader Type.

Season's Growth (in.)	3 SCAFFOLD LIMBS				4 SCAFFOLD LIMBS				5 SCAFFOLD LIMBS			
	No. cuts	Ave. length of cut	% of total length	Ave. weight of cut (oz.)	No. cuts	Ave. length of cut	% of total length	Ave. weight of cut (oz.)	No. cuts	Ave. length of cut	% of total length	Ave. weight of cut (oz.)
Second	21	10	41		24	12.9	51.8		24	10.6	37.0	
Third	37	19.5	49	0.54	42	16.7	58.0	0.46	86	14.0	51.0	0.42
Fourth	60	16.9		0.14	78	14.9		0.34				

finer character than that taken out of the tree with four main scaffolds. Records not included in this table show that more than twice as much two and three year old wood was removed from the tree with four as from that with three scaffolds. The ideal system of training is one which produces a well shaped tree with the least amount of pruning and, from the above results, as well as the photograph of a tree developed from an initial selection of three lower scaffolds and a leader (*Fig. 4*), it is evident that very few scaffold limbs are needed to develop a well shaped tree.

IMPORTANCE OF MAINTAINING WELL BALANCED GROWTH

A partial explanation of these figures can be found in the following discussion of balanced growth. When the trees had completed their second season's growth there was relatively very little difference in the amount of pruning necessary. *Table 1*. They had been subjected to attacks of Oriental fruit moth, the larvae of which stop terminal growth as they work their way into the tips of the growing shoots and produce a summer pruning effect, which does not seriously interfere with the development of the trees. *Figs. 1, 2, 5 and 6*. The development of new shoots from buds near the terminal end of the branches is well illustrated in all the photographs and is a characteristic which should be kept in mind when heading branches back.

The relative growth of the scaffold branches and the leader was fairly well balanced in some cases, *Fig. 1*, and had already become unbalanced in others, *Fig. 5*. In the latter case the two lower scaffolds (*A* and *B*) had made a strong growth at the expense of the upper laterals and leader and in subsequent pruning it was necessary to thin out

and head back their growth fairly heavily. *Fig. 6*. This heavy pruning reduced the leaf area and checked their subsequent growth. The upper part of the tree was pruned as lightly as possible in order that the branches in this area might retain as much leaf surface as possible. The success of this growth-balancing operation can be seen the following spring at the completion of another season's growth. The upper part of the tree has made the stronger growth and there is more balance between the upper and lower portions of the tree. *Fig. 7*. It is surprising how quickly this condition can be corrected if it is recognized early enough.

If steps were not taken at this time to subdue the growth of the two lower scaffolds (*A* and *B*) they would continue to grow at a much faster rate than the main trunk (*C*) and it would only be a question of time before the upper part of the tree would be greatly restricted. This condition is illustrated in an older Yoshimo flowering cherry tree. *Fig. 9*. This tendency to make an unbalanced growth is present in all the Japanese flowering cherries I have had an opportunity to observe and Roberts,² in discussing the pruning of young sour cherry trees, *Prunus cerasus*, emphasizes this tendency of the lower branches to rob the leader and the need of keeping the branches of the sour cherry tree well balanced during the early training.

Occasionally the uppermost scaffold branch will develop faster than the branch which has been left as a leader. Such a condition was shown in *Figs. 11 and 12* of the first article on this subject³ and is again illustrated in *Fig. 6* (branches *D* and *E*). When this occurs and the relative position of the

²Roberts, R. H. How to Prune the Young Cherry Tree. Wis. Agr. Expt. Sta. Bul. 370, 1924.

³Whitehouse, W. E. See Footnote 1.

scaffold branch (*D*) is such that it is near the center of the tree and can be developed to take the place of the leader (*E*), the necessity for heavy corrective pruning of the strongest growing branch is obviated and the former leader makes an excellent scaffold branch. *Fig. 8.*

Enough has been said about maintaining the balance between the growth of different parts of the tree to indicate that after careful selection of scaffold branches and leader the type and amount of pruning necessary during the next five or six years is determined to a large extent by our efforts to maintain balanced growth in the tree. After the second season's growth, each scaffold branch with its new growth must be considered as a unit in itself, selecting a strong upper growth as a leader and spacing and balancing the remainder of the growth by thinning out and heading back. *Figs. 1, 2, 5 and 6.*

DEVELOPING THE UPPER WHORL OF SCAFFOLD BRANCHES

As in the case of the scaffold branches, a number of strong growths have developed from the six or seven buds near the terminal end of the shoot left as a leader, and short spur-like growths over the remainder of the area. *Figs 2 and 5.* It is from these new growths that we must develop a secondary whorl of scaffold branches which will constitute the framework of the upper part of our modified leader tree. Probably the easiest way to visualize what pruning is required at this point is to hold a piece of paper over the photographs, *Figs. 1 or 5*, in such a way that the top edge coincides with the lowest arrow and assume that this point is the ground level. Theoretically speaking, the original scaffold branches are eliminated and we have

what appears to be a one year old tree at a point where it is necessary to select its scaffold branches. Plans had been made the previous spring to select these upper scaffold branches as soon as the new growths on the leader had developed definite vegetative tendencies, but heavy infestations of the Oriental peach moth occurred that summer and it appeared advisable to let the selection go until the end of the growing season. Even then the growth of the cluster of branches from the upper third of the leader was quite variable, some very weak and some moderately strong, but none of a good strong growth one would normally expect. The uppermost branches of this cluster were particularly weak, *Figs. 1 and 5*, but the weaker branches were thinned out and others selected so that they were as well spaced as possible under the circumstances. *Figs. 2 and 6.*

Attention should be called at this point to the greater distance between the upper and lower whorls of scaffold branches on the tree with only three, as compared to the tree with four lower scaffolds, *Figs. 2 and 5* (arrows). It is important that sufficient space be left between these whorls in order to allow for their subsequent development without one unduly crowding the other. As the trees like *Fig. 4* grew older, ample space between the lower scaffold branches in the whorl (at least 6 inches) as well as between the whorls themselves afforded an opportunity to do all the training work necessary with relatively light pruning as compared to those trees having more lower scaffold branches with less space between each and less space between their upper and lower whorls. *Figs. 7 and 8.*

Oriental peach moth injury was comparatively light during the third season and the strong growth secured

that year presented an opportunity to select additional well spaced lateral branches from the leader. *Fig. 4 (a and b)*. This completed the development of the upper whorl of scaffolds and a permanent framework for the tree was established. Development of the leader from this point on is unnecessary and, if desired, it can be suppressed at the end of the next season's growth by cutting it back to one of the strong outside branches developing from it. The only pruning from

now on is that needed to maintain a balance between the growth of each of the scaffolds and the removal of crossing and crowding branches.

It is apparent that a careful system of training during the first four years which keeps the number of scaffold branches selected at a minimum, spaces them well around the trunk and maintains a balanced growth between them will produce a tree so well developed that it can be maintained with relatively little pruning thereafter.

The figures follow consecutively on pages 240-248.

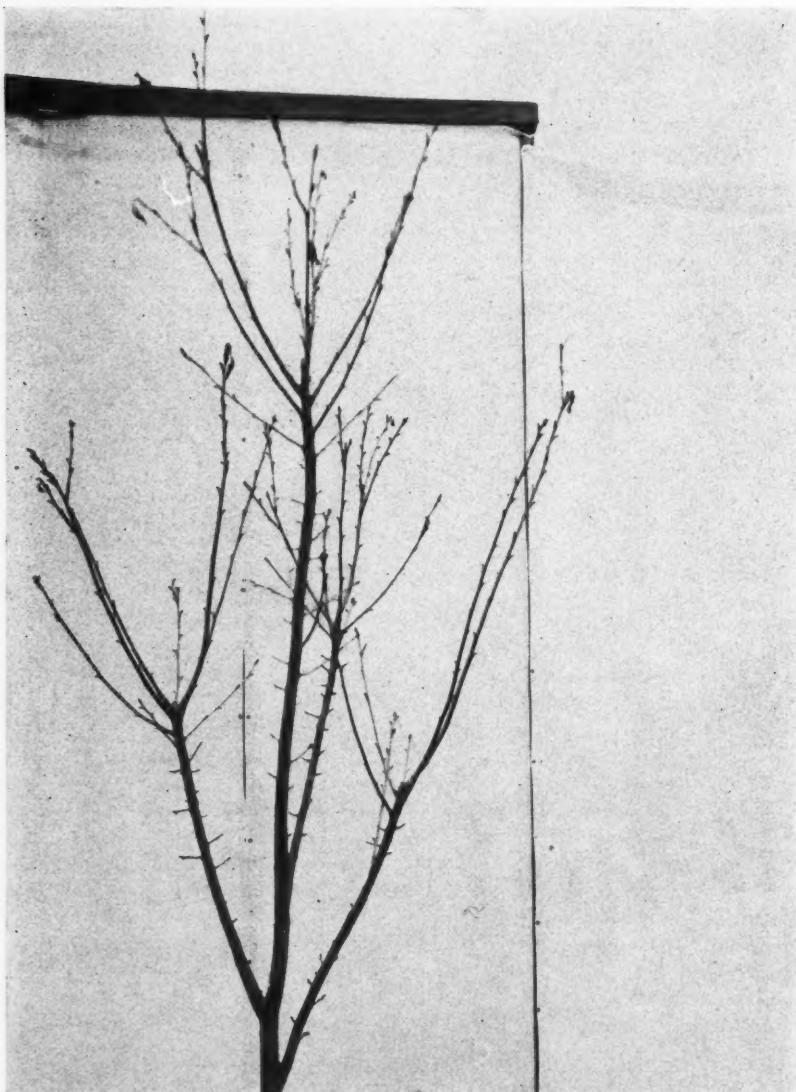


Fig. 1.—Growth of scaffolds and leader well balanced at end of second season. Stronger growths developed near terminal end of shoot. Summer pruning effect result of Oriental fruit moth injury to tips of growing shoots. Photographed spring, 1935 (before pruning).

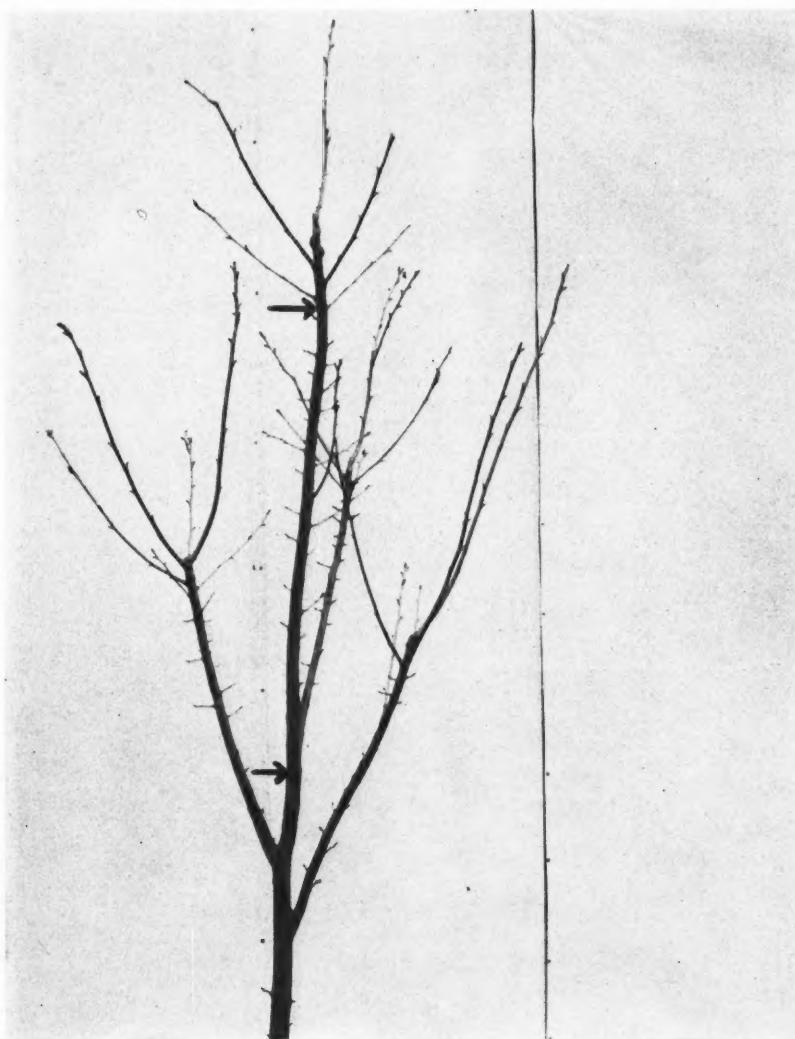


Fig. 2.—Starting the development of the upper whorl of scaffold branches and maintaining a balanced growth between the lower scaffolds by thinning out the weak or crowding branches. Note excellent distance between lower and upper scaffold whorls (arrows). Photographed spring, 1935 (after pruning). (Previous photographs of this tree Figs. 13-16 inclusive, p. 119, The National Horticultural Magazine, April, 1934).

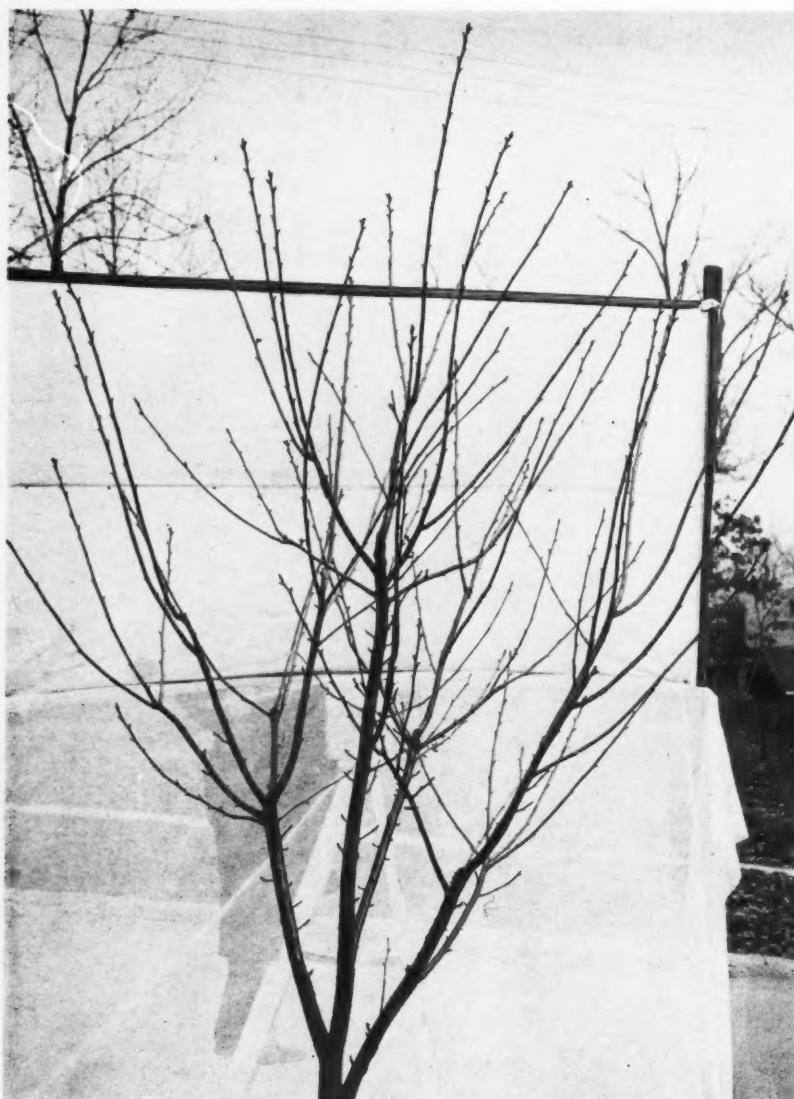


Fig. 3.—Growth of upper and lower whorls of scaffold branches well balanced at end of third growing season. Photographed spring, 1936 (before pruning).

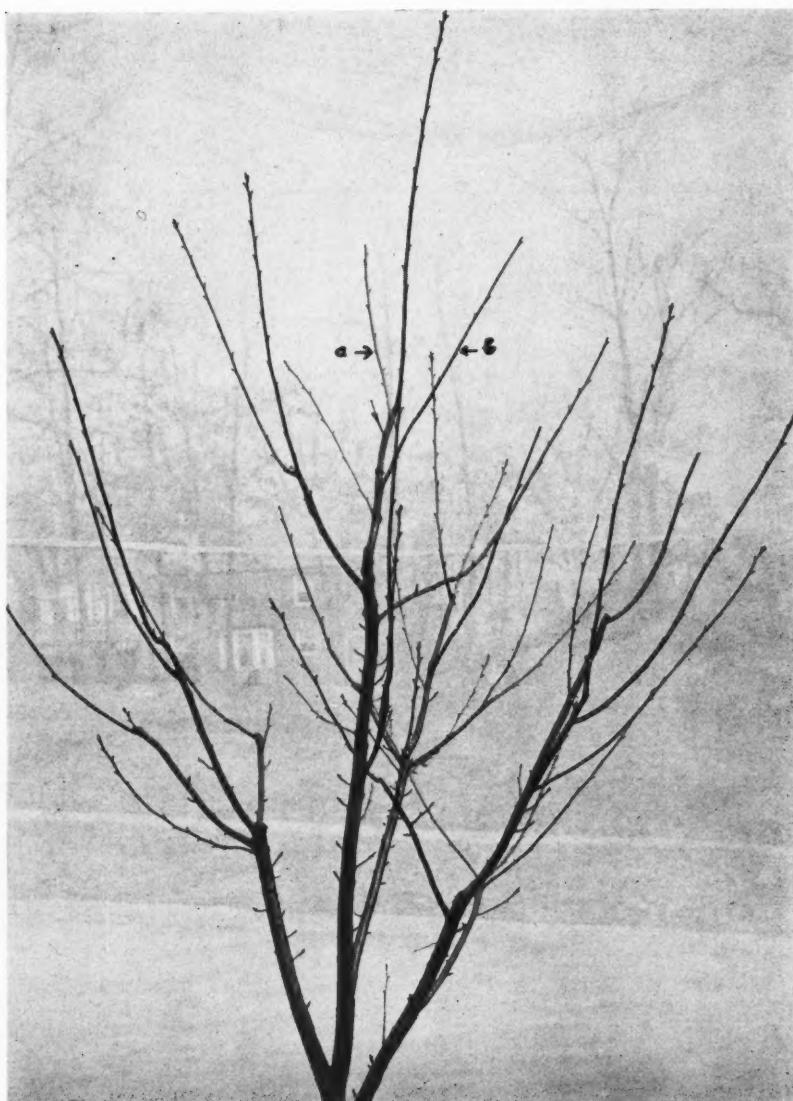


Fig. 4.—Selection of additional well spaced lateral branches (a and b) arising from leader completes the development of the upper whorl of scaffold branches. Thinning out the weak or crowding branches and heading back when necessary insures growth balance. Photographed spring, 1935 (after pruning).

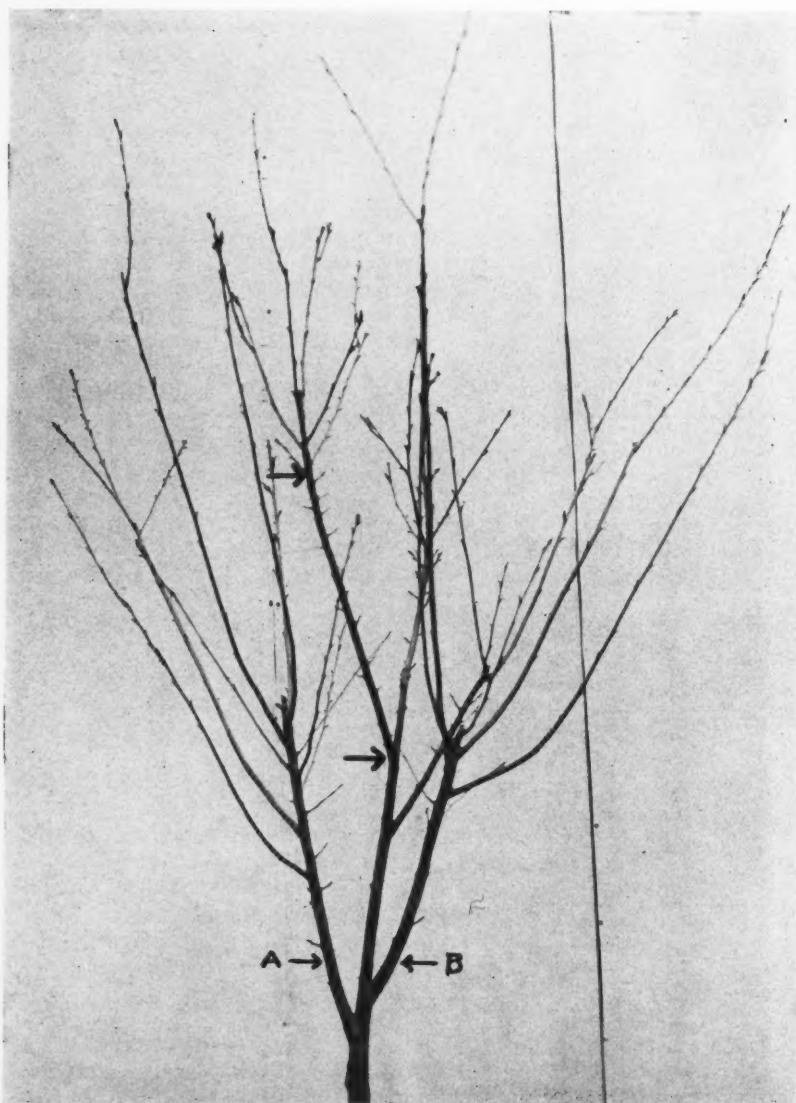


Fig. 5.—Strong growth of two lower scaffold branches (A and B) at expense of upper laterals and leader. Distance between lower and upper whorls of scaffold branches not as great as desirable (arrows). Protographed spring, 1935 (before pruning).

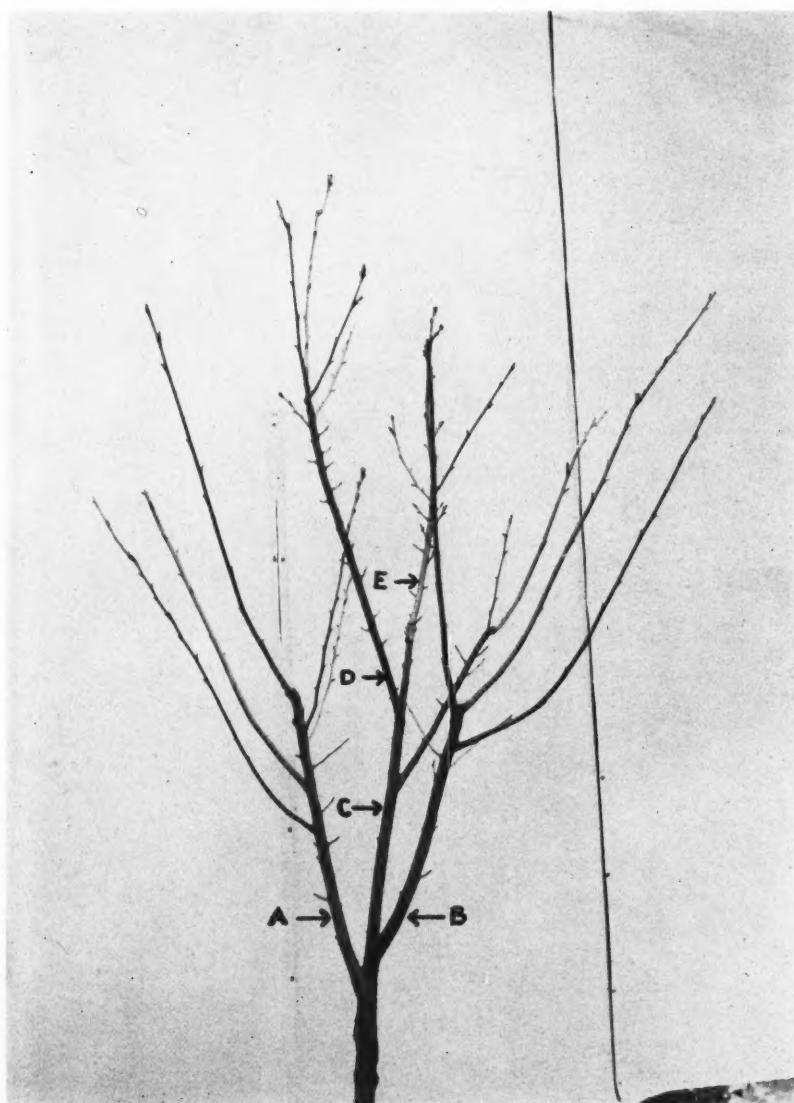


Fig. 6.—Heavy pruning of two lower scaffold branches to subdue their growth. Selection of inner lateral (D) to replace (E) as leader and start of the development of the upper whorl of scaffold branches. Photographed spring, 1935 (after pruning).

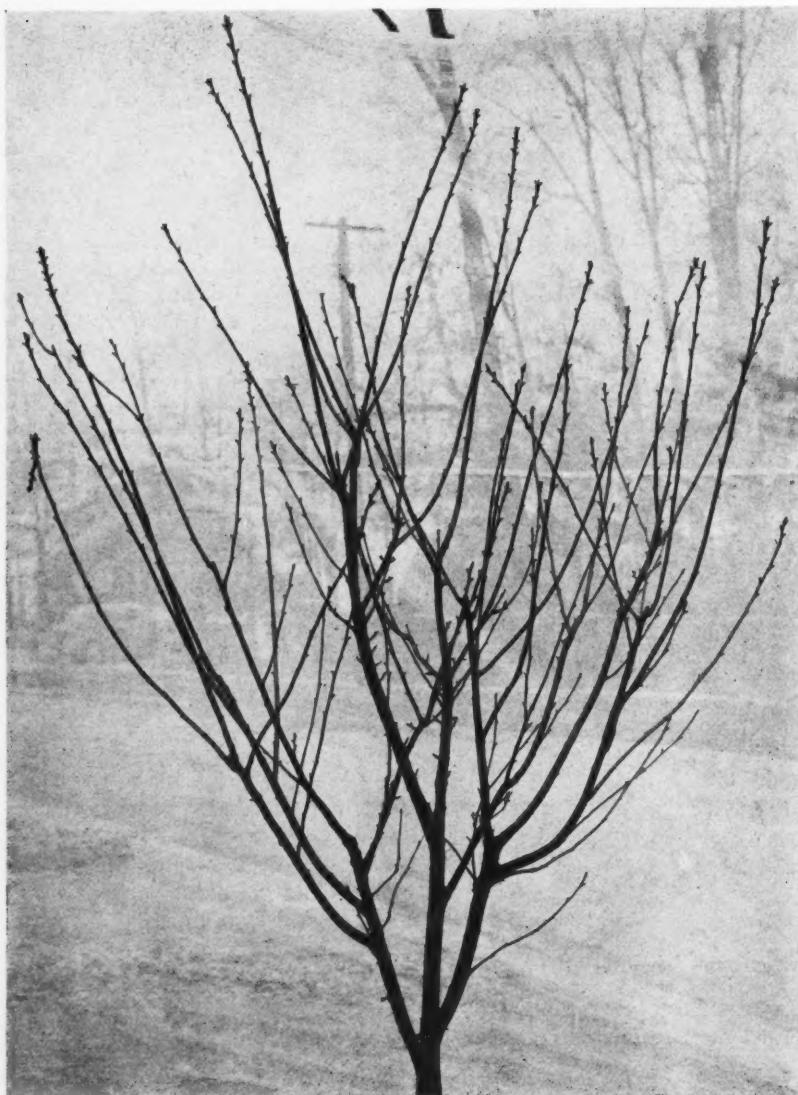


Fig. 7.—More balanced growth between two lower scaffold branches and the remainder of the tree. Inner lateral selected previous year has developed into good strong leader. Photographed spring, 1936 (before pruning).

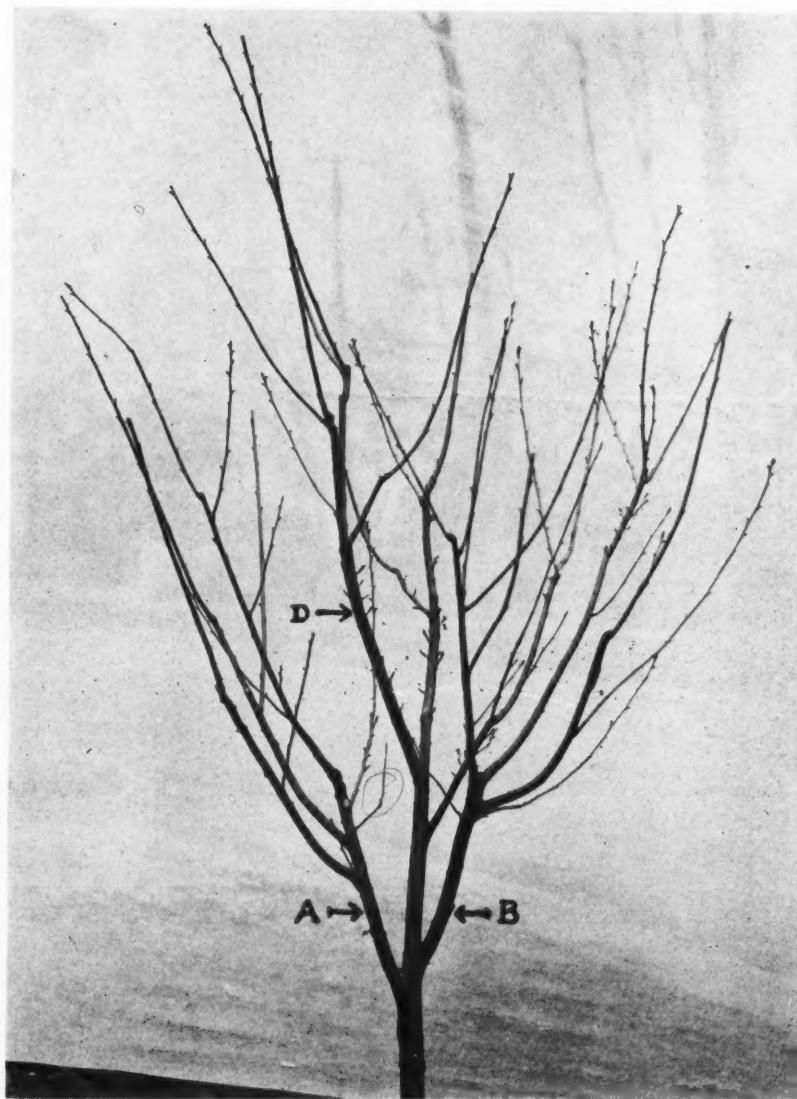


Fig. 8.—Lower scaffold branches (A and B) continue to receive fairly heavy corrective pruning to subdue growth. Stronger growths on leader (D) allows continued development of upper whorl of scaffold branches. Photographed spring, 1936 (after pruning).

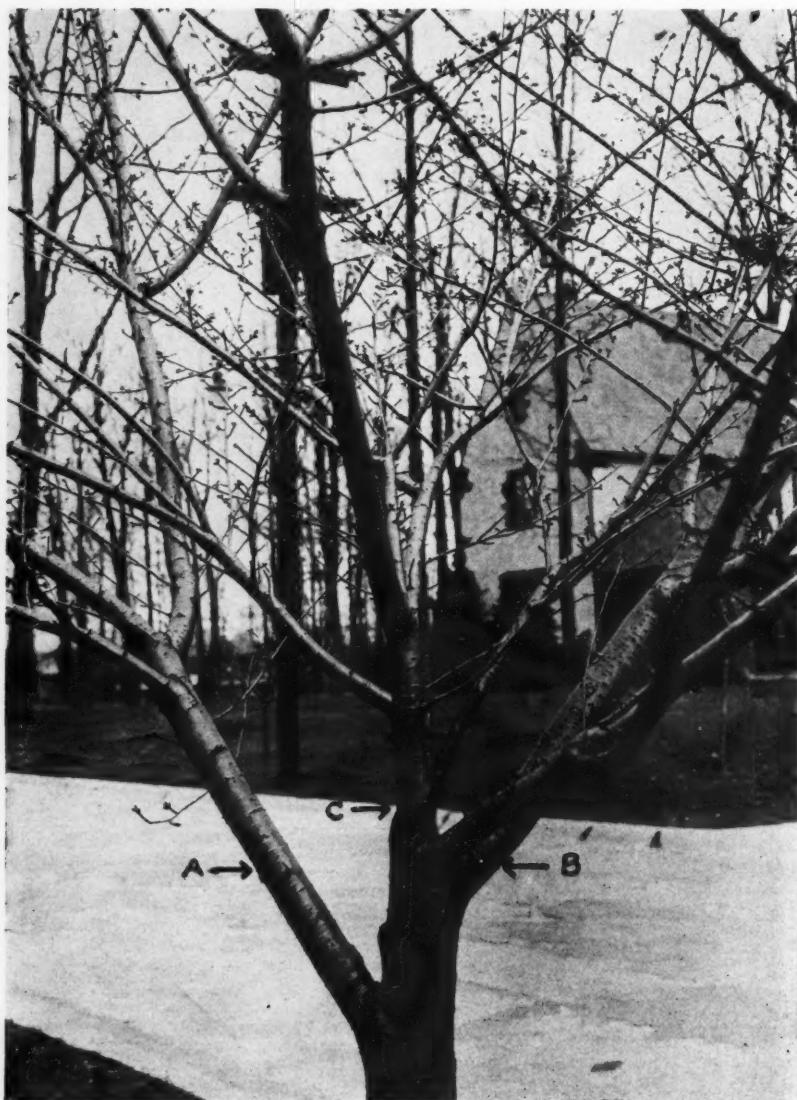


Fig. 9.—Girdling of the upper part of a Yoshino cherry tree caused by careless spacing of scaffold branches and non-maintenance of a balanced growth between lower scaffold branches (A and B) and leader (C). Photographed spring, 1935.

For Better Tulips, Omit Fertilizers

R. M. CARLETON

AFTER several years' observation of an extensive experiment in Tulip propagation, I am forced to disagree sharply with the conclusions drawn by Mr. Bates in his article in the July, 1937, issue.

The experiment* I mention was undertaken to secure data on the possibility of commercial production of tulips in America, and was under the full-time supervision of an experienced plant pathologist, Dr. Clyde Homan. During the course of this work, hundreds of samples of soil from Dutch bulb fields were analyzed to determine their exact structure and mineral content. These were duplicated as accurately as possible, and extensive trials run in greenhouses, with all variable factors under complete control. The effects of mineral content of soil, moisture, temperature, and light were compared, using elaborate checks to insure accuracy.

Since this series of test was conducted for commercial purposes, particularly to determine factors affecting the forcing of florists' varieties, exact details cannot be given. Certain conclusions can, however, be drawn as to conditions under which garden varieties can be expected to do their best. I can state definitely and emphatically that many of our former practices and our recommendations to would-be Tulip growers have been directly opposite to what they should have been.

First, the matter of soil fertility deserves special emphasis. The analyses of Dutch bulb soils showed them to be so low in organic matter that exact

quantitative determination was difficult, very low in nitrogen, only fair in phosphorous, and practically no potash. In short, they were largely silicious sands, heavily impregnated with lime. They were obviously nothing more or less than the sea-bottoms on which had been deposited the remains of shellfish and other marine animals. To these had been added no fertilizer of any kind.

If one will consider for a moment the physiological processes involved, the logic of growing tulips in such soils (if permanence is desired) will be evident. As with many species, the tulip will not reproduce asexually unless an excess of plant food is present. If grown in poor soils this species will concentrate all the strength of the plant in maintaining the original bulb. If, however, plant food in excess of the needs of the parent bulb is supplied, the mechanism of the plant calls for the division of the bulb into smaller individuals, the process which the Dutch know as splitting. It is only when splits are wanted for propagating purposes that the Tulip grower feeds his bulbs. When growing for the finished export bulb, no fertilizer whatsoever is given.

The measure of success attained by Mr. Bates was perhaps due to several factors:

1. The favorable lime ratio. His recommendation here is sound—tulips require plenty of lime. I would prefer to use this in the form known

*This experiment was carried on by Vaughan's Seed Store and is still in progress. Bulbs are being propagated experimentally in more than 20 locations in the United States.

as finishing line, which supplies both calcium and magnesium. The latter element is often lacking in American soils.

2. The use of sheep manure and bone meal as fertilizers. After watching the attempts at building up soil fertility with these materials I am forced to the conclusion that they do good largely because they do no harm, and are of value, therefore, only for negative reasons. This is certainly the case with bone meal. Except for the inconsequential 3% of nitrogen it contains, the plant food in bone meal locks up almost instantly in insoluble forms when applied to damp soils. Although in bottom lands not subject to leaching it may become slowly available over a period of from five to ten years, in a soil as porous as that described by Mr. Bates, it will have washed away mechanically before this could take place. The nitrogen is highly soluble, and is probably gone down the drain within two weeks. Since application was made in fall, before the roots of Tulips are active, none of this had much effect.

Sheep manure usually analyzes about 1-1-1 available, and if used at double the ordinary rate of 50 pounds to 1,000 square feet, will actually deliver less than 1/1000th of a pound of available plant food to the square foot. Since estimates for gravel soil allow for about one-fifth of this to reach the roots (which are non-existent at the time anyway) it is obvious that except for a faint dusting of humus, sheep manure applied to Tulips in fall is about as effective as brick dust or pure sand.

It must also be remembered that too-quick solubility is a defect, as in the case of blood meal, where the nitrogen flows out of the mixture so quickly that within a week it will all

have passed through a sandy or gravelly soil.

3. The mechanical condition of the soil. Due to the gravelly nature of the topsoil, conditions for tulip culture were ideal, if any reliance can be placed in the analyses made of Dutch fields. Since lime was added, conditions practically duplicated those found where the best bulbs in Holland are grown.

4. Moisture conditions. The experiment mentioned above proved conclusively that drying-out was fatal to good bloom. Dutch fields are less than two feet above an artificially-maintained water level. This means that the bulbs are seldom dry. The unusually dry weather in Holland last summer altered the ideal moisture conditions usually found there, and as a result, bulbs offered for sale in fall 1937 will be extremely small and the resultant bloom will probably be poor.

The Bates planting apparently did not dry out rapidly, due to the hardpan which held the water for several hours after a rain. Comparison of flower size with rainfall of the previous year might be an interesting development of the data given.

Obviously, the above comments on cultural methods apply only where permanence is wanted. Under these methods, splitting will be inhibited, and each year some of the flowers will reach maximum size. Some division is to be expected, however, since it is not possible to keep conditions ideal. A light feeding will have to be given every three years to restore the food removed by the bulbs in sandy or gravelly soils. If about 25 pounds of a good *inorganic* fertilizer is used to every 1,000 square feet, this will just about take care of the needs of the bulbs. This refers to a fertilizer

with an analyses of about 5-8-6 or 4-8-7. This should be applied in spring, just before the buds appear, and not in fall. If the soil is an ordinary garden loam, no fertilizer will be needed for years.

In case of spring droughts, watering is essential, as lack of moisture will not only stunt the bloom, but prevent the formation of buds the following year.

One of the moot questions is "to dig or not to dig." Certainly the ordinary practice of yanking out the bulbs by main force as soon as the petals fall, and tossing them into a basket stored in a dry cellar is fatal to good results. However, our experiments have proved one fact very definitely—bulbs allowed to remain in the soil where they are subjected to high temperatures for a period longer than a month are definitely injured. Storage at temperatures over 70 degrees shows its effect on the bulb. A certain after-ripening, for approximately four weeks, at a temperature above 70 degrees is necessary, however.

From these experiments, the following empirical conclusions may safely be drawn:

If summer temperatures in excess of 85 degrees are expected, and the bulbs are planted in full sun, they should be dug about three weeks after the foliage has died down completely (not merely yellowed) and stored in a cellar where the average temperature will not exceed 70 degrees until after the heat of summer has a chance to penetrate. If the temperature can be kept below 70, so much the better. Wherever possible, night air should be admitted to keep the bulbs as cool as possible. (Temperatures below fifty degrees, however, may be expected to

accelerate blooming in spring by several weeks.)

Where the tulip beds are under the shade of trees during the summer, better results can be had by leaving the bulbs in the soil, since at the proper planting depth of six inches, the soil will ordinarily approximate 70 degrees, and because moisture conditions are more nearly ideal than in the ordinary cellar, the bulbs will keep better.

These directions apply where permanent garden effect is desired. For forcing, or where tulips for bedding can be replaced yearly, far better results can be had by feeding at a rate of 30 pounds per thousand square feet of bed just as the buds are showing. The same inorganic fertilizer of an approximate 5-8-7 analysis can be used. This will result in enormous flowers of the type seen at the famous Dutch shows, where 36 inch stems are not unknown on varieties that do not reach 26 inches in America, and where flowers eight inches long are the common thing. In display plantings, we have found, however, that tulips of this type require careful protection from the wind. The Ideals in particular were almost worthless unless practically packed in cotton wool.

Obviously, no one can make a definite statement and not have it disproved, since there are entirely too many variable involved to be certain that no errors exist in one's gardening logic. I do feel that much is yet to be learned about tulips, and that we may expect more progress in the next few years than we have made in the past century of American Gardening.



Lilian A. Guernsey

[See page 260]

The August-flowering Rhododendron serrulatum

Rhododendron Notes

Rhododendron catawbiense album

This white variety of the native purple Catawba rhododendron is of fairly frequent occurrence in the Blue Ridge mountains of Amherst County, Virginia.

While trout fishing in the spring of 1932 I saw a plant of this variety and marked it, intending to obtain it in the fall. Being unable to do so, I went back in May, 1933, and again found the plant, together with four others. I marked four of them and in the fall of 1933 I dug them up and now have them growing in my garden. One plant bloomed in 1936; two in 1937.

In early June, 1937, I found three more of these plants in a different locality, and on the same day a friend of mine found four in still another locality. The latter I saw a week later, when they were still in bloom. Three mountain folk of my acquaintance have told me they knew where others were to be found.

The plants in my garden are pinkish in bud, but upon opening the blossoms are pure white with greenish spots on the upper lobe. They do not have the purplish tinge shown in the color illustration opposite page 62 of Bowers' "Rhododendrons and Azaleas." (Unfortunately, the color of the illustration referred to was intensified by the reduction and printing process, so that the color plate appears considerably more tinged than the original drawing which shows the flowers practically white.—C. G. Bowers.)

In size the individual flowers are as large as those of Roseum Elegans, Dr. Dresselhuys, Lee's Dark Purple and other hybrid rhododendrons in my

garden. Also the trusses are as large as those of the hybrids mentioned.

The plants appear exactly like the type except as to the color of the blossoms.

I noticed the following: that these plants seem to occur in groups of three or more; that in each group the individual plants are of the same size and apparently from seed of the same year; that the plants in each one of the three groups I have seen are of different size from the plants in each other group and apparently from seed of a different year.

The mountaineers who have told me of knowing the white variety of *Rhododendron catawbiense* always refer to them in the plural and not as a single plant. The white variety wherever I have seen it has been growing in the midst of numerous plants of the purple type.

I doubt that the horticultural clone, commonly sold as Catawbiense Album (Waterer), is the very best individual of this variety that ever occurred or that the variety is of as infrequent occurrence in the wild as is commonly supposed.

POWELL GLASS.

Lynchburg, Va.

Some Azalea Notes

In the spring of 1926 my friend Mr. George Fraser of Ucluelet, Vancouver Island, B. C., sent me seeds of an azalea hybrid (*Rhododendron arboreum* \times *R. occidentale*) which had its origin in his garden there. Since 1932 the plants grown from these seeds have been flowering more freely each season. Botanically I see nothing remarkable about this cross, as the plants

seem to be quite intermediate in all characters unless it be the very compact twiggy habit of growth in which it excels either parent, but from the garden point of view it is dependable.

The flowers are scarcely larger than the best forms of *R. arborescens* and are nearly white but the tube is slightly more dilated and the limb and corolla lobes are broader than in that species. A majority of the seedlings exhibit a deep yellow area on the upper corolla lobe and there are also yellow shadings in the throat of the flower. And this mating of what are perhaps the two superlatively fragrant American azaleas has lost nothing in that respect.

R. occidentale is neither hardy nor satisfactory in our eastern gardens but this hybrid has inherited none of these tender traits. Propagation offers difficulties but the plants bear a few seeds occasionally.

The second hybrid azalea illustrated, *R. roseum* \times *R. japonicum*, originated here in 1928 and has been flowering for five years. Or at least *some* of the seedlings have flowered for five seasons, for this is one of those crosses of which some plants possess hybrid vigor while others are weak and unhealthy. The better forms, one of which is shown in the illustration, are fairly free flowering, and while the general color tone is rose pink as in *R. roseum*, some orange shadings from its oriental parent creep in along the tube and inside the corolla. The flowers are considerably larger than in *R. roseum* and the fragrance is a combination of that of both parents—something rather difficult to describe.

The poorer forms flower but little, though some of them produce many buds that dry up and fall without opening as if winter-killed and those that do open on such plants are small

and of inferior color. One thriving plant is sparingly fertile, bearing a few viable seeds. Like its parents, this azalea flowers quite early in the azalea season.

"Like little Regal lilies" has been said of the flowers of *R. atlanticum* \times *R. japonicum* on more than one occasion. And the yellow shadings in the throat, purplish pink medial lines on the back of the corolla lobes, the general shape of the flower—despite its five-parted form instead of six as in the lilies—together with pleasing fragrance, may merit somewhat this comparison.

My plants of this hybrid are sterile, producing no seeds, and while this character definite limits further experiments in breeding new forms, it is an advantage to the plant in that losing none of its vitality in seed production it is able to spend it all in the formation of next year's flower buds. This obviates the necessity, from the cultural point of view at least, of removing the fading clusters, an interminable operation, the elimination of which will not displease the average gardener.

It seems odd that a condition of being almost if not quite sterile should obtain among the azaleas described above, as they one and all belong to the *Pentanthera* group or, as more recently described, the *luteum* subseries of the azalea series of the genus *Rhododendron* and are, or should be taxonomically at least, quite closely related. But with over a score of first crosses of this subseries growing here about half of them manifest some degree of sterility, a dwarfing of a number of the plants, or some other evidence of incompatibility which leads one to surmise that the taxonomic affinities in this group are either not all so close as they apparently seem to be

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Rhododendron arboreum × R. occidentale

or, as is in my opinion more probable, the evolutionary processes of their formation has been completed in times so remote that they are species of considerable antiquity as plants go and that their age long separation has created certain interspecific antipathies that are not so easily overcome.

JOSEPH BENSON GABLE.
Stewartstown, Pa.

As previously announced, the intention of this column is to record current news notes and items of interest to those who grow rhododendrons or azaleas. Sometimes facts that have long been known to a few are so little known to the multitude that they are worthy of wider dissemination.

Along this line, a fact not generally realized by growers of rhododendrons in the north is that *Rhododendron catawbiense*, *R. maximum*, *R. minus*, *R. calendulaceum* and possibly other mid-season and late varieties actually bloom no earlier in their native southern habitats than do the same species when transplanted to New York or New England. Indeed, they sometimes bloom later in the mountains of North Carolina than at Boston. *Rhododendron catawbiense* and most of its hybrids, for instance, reaches the height of its glory on Long Island about the first week of June, having bloomed a week earlier at Philadelphia and in March or April at San Francisco. It reaches a similar development at Boston about the second week of June and many flowers are gone by June 15th. In the mountains around Asheville, N. C., however, where the species has its home, full bloom is not reached until about June 15th. The same dates are approximately correct for the blooming of the Flame azalea, *R. calendulaceum*. Northerners wishing to see these plants in bloom in their wild sit-

uations, therefore, should not plan to visit the southern mountains until the time when their plants at home are blooming, or even later, despite one's natural tendency to suppose that the southern plants must necessarily bloom earlier. This is doubtless occasioned by the cool temperatures which accompany high altitudes, for species growing in the lower and sometimes drier regions of North Carolina, such as *R. atlanticum*, ordinarily bloom from three to four weeks in advance of their blooming dates for New York and Massachusetts. The Catawba rhododendron and the Flame azalea flourish at altitudes of from 4,000 to 6,000 feet above sea-level, where the air is cool and quite moist. This naturally retards the blooming date.

Another observation regarding American rhododendrons and azaleas concerns their blooming dates from one year to the next. In general, it may be said that the earlier to bloom are the more influenced by the weather and hence the more variable in time of bloom. *Rhododendron vaseyi* and such other species as the Korean *R. mucronulatum* finish their rest periods early and are in readiness to bloom as soon as the weather becomes warm enough to force the buds. Such species naturally depend upon the vagaries of an "early" or "late" spring to release them from dormancy. The later sorts, on the other hand, generally fail to conclude their rest periods so early or require to make vegetative growth before blooming, so they are unprepared to produce flowers early even when spring temperatures are unseasonably mild. Recent observations indicate that length of day may have something to do with it, too, and this is further borne out by the failure of certain late-blooming sorts to bloom early even when forced under glass.

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[See page 254]

Rhododendron roseum \times *R. japonicum*

It is probably safe to say that species which normally bloom on and after June 1st at the latitude of New York City are little influenced in their time of bloom by an "early" or "late" spring. In plant breeding practice, one may count upon certain plants of either rhododendrons or azaleas to bloom at approximately the same date every year without a variation of more than 24 hours or so from one year to the next.

The red azalea, discovered last year by Dr. Camp and mentioned in this column last quarter, is now in cultivation, plants having been brought in from its mountain habitat in Kentucky by the writer and Mr. Henry T. Skinner of Cornell University. Propagation from seeds will also be undertaken immediately. The color, while not appearing "black scarlet" this year, was nevertheless a very beautiful scarlet in the darker forms—difficult to compare with any other azalea commonly seen in this country. In fact, we do not know of any other azalea, even among the Ghent hybrids, that bears a color just like this and it is certainly worthy of great praise in its best forms. It is quite variable, however, and evidently produces offspring of orange-vermilion color similar to the darker forms of the Flame azalea already well known to gardeners. What the taxonomists will do to this plant, which we now speak of as Camp's Red Azalea, remains uncertain, but the plant appears to be simply an extremely dark form of *R. calendulaceum*—when considered from the horticultural rather than from the taxonomic angle. The plants we saw, however, seemed superior to the average *R. calendulaceum* in several respects beside the color distinction. The flowers were generally of good size, perhaps slightly larger than the aver-

age of *R. calendulaceum*, and many of the plants bore their flowers in a spherical or ball-like inflorescence much like the truss of the true rhododendrons and about the size of an average truss of *R. carolinianum*, with twenty to thirty flowers in each truss. This characteristic, although by no means uncommon in *R. calendulaceum*, seemed to be more perfectly developed in the red azalea and added considerably to its striking appearance. With the color a vivid red, resembling that of a fireman's shirt but ever so much more sparkling and translucent, these good sized flower trusses on bushes four feet high are very gorgeous to behold. The stamens are long and far exserted—as long again as the corolla—and are also a dark red in color. The corolla of the darker forms is a rich but sprightly scarlet—tomato or geranium red in some of the other forms—with a touch of orange-vermilion in the throat and in the middle of the upper lobe. When seen in full bloom on the 18th of June at an elevation of about 4,000 feet, there was only one large colony of the best dark form. If dug up and carried away there would be no more than enough plants to fill a motor truck, so we think it advisable not to divulge the location of the colony. By propagation from seed, however, there will be no delay in its introduction into the nursery trade and it is thought best to protect the parent plants for seed production, so far as that may be done. Vegetative propagation of the choicer forms should also be carried on, since variation is probably considerable. Although not phenomenal, this new form is something different, beautiful and destined, we think, to become quite generally useful, for our guess is that it will prove hardy in the north. We hope its color will remain just as good at lower altitudes.



Lilian A. Guernsey

[See page 254]

Rhododendron atlanticum \times *R. japonicum*

Apropos of the observation that the color of Camp's Red Azalea this year was perhaps not quite so dark as the darkest shades noted last year by Dr. Camp, it should be mentioned that azaleas and rhododendrons frequently vary somewhat in the intensity of their pigmentation from one year to the next. This has long been noted by collectors, plant breeders and others. Take, for example, a flower on a given plant and record its color this year according to a definite standard, such as Ridgway's chart. Next year the flowers on the same plant may be of slightly greater or less intensity, although approximately of the same general hue. For accuracy the flowers must be similar in their stage of development, for the corolla changes color as it matures and flowers at different stages of development are definitely not comparable. We can explain these phenomena best by the general assumption that weather conditions of the current or previous season probably affect the internal chemistry of the plant or alter the concentration of cell solutions. Site and soil, too, cause considerable differences. All these factors explain why it is hard to accurately identify or "fingerprint" varieties.

CLEMENT G. BOWERS, *Chairman.*

Rhododendron serrulatum (See page 252)

This came to the garden here as a plant to be identified about five years ago and took the first two years to make up its mind to settle down to flowering. Since that time it has been through the cold winters of 1933-34 and 1934-35 with no sign of injury although I am told by the chairman, that it is not hardy in the North. In another garden where it is planted in a situation with more sunlight, it has grown better and flowered more profusely than with me, but in neither case has it suffered winter injury.

If one were to be handed a flowering branch, the first thought would be *Rhododendron viscosum*, but the flowers are a trifle smaller, the perianth tubes markedly more slender. Here the plant has flowered each year in August, which is a month later than the flowering of *viscosum*. This late blooming and the sweet scent of the flowers are the two important points of this plant, which with us is not so prodigal of bloom as is *viscosum*. How much better it would be in its proper range, I do not know and have no means of finding out. If any members know this in the wild, we should be grateful for a note.

Washington, D. C.

A Book or Two

Oklahoma Flora. By Thomas R. Stemen and W. Stanley Myers. Harlow Publishing Corporation, Oklahoma City, 1937. xxix + 706 pages. \$6.00.

The title indicates that here is a needed treatment of an unsatisfactorily known area. Strictly speaking it is a manual patterned in the fashion of standard works. After the key to the families of ferns and seed plants, the families are taken up in essentially the Engler and Prantl sequence. Following a family description, there are keys and brief descriptions of the genera and species. Separate indices are given for common and scientific names. There are also six appendices and a glossary of botanical terms.

Books about plants are read by professional botanists, students, and amateur plant lovers. Few writers have succeeded in satisfactorily addressing all three groups at one time. This work is certainly no exception, and it exhibits the vacillations that usually attend such attempts to compromise.

All regions have their interesting botanical peculiarities, and in books concerned with a limited area, observations of such peculiarities can well be put on record. In this respect, the present work is decidedly feeble. The phytogeography of Oklahoma is dismissed with the statement, "The flora of the northern half of the state is typically northern, while that of the southern half is typically southern."

Grasses, sedges, and rushes are not treated, while the equally difficult *Umbelliferae* and *Compositae* are included. Furthermore, the former groups do

not appear in the key to the families, certainly an undesirable omission.

In general, the school of extreme splitters is followed in delimiting groups, and for unexplained, and probably unexplainable reasons, the all but abandoned American Code of Nomenclature is used. The use of awkward English units of measure is hardly tolerable. One of the six appendices could well have been given over to explaining the abbreviations of authorities' names. No mention is made of the collections on which the work is based. There is a lack of uniformity in the statements of range, and no extra-territorial ranges are given. The entries in the glossary are in certain cases provoking. For example, *hermaphrodite* is defined here as "of both sexes." The student who seeks the meaning of this term in the present book is apt to acquire misinformation. Appendix C lists the poisonous plants of Oklahoma. Among other omissions are *Lupinus*, *Asclepias*, and *Zygadenus*.

The book is of convenient size for use in the field, and is stitched loosely as a field book should be. The light buff covers, however, are pretty certain to show unsightly stains after a few trips to the field. The type is well chosen, although in the copy examined the impression is rather faint. The keys should have been more deeply indented. In part the genera are numbered with Arabic and in part with Roman figures. Why the Roman numerals appear at all is hard to understand. A few of the 494 figures are admirable.

This book will serve fairly well for the identification of most of the plants

of Oklahoma, but its publication should not deter the appearance of another book, more carefully executed and more heavily laden with plant lore.—R. F. M.

North American Rock Plants. By W. H. A. Preece. The Macmillan Company, Inc., New York, 1937. 204 pages, illustrated. \$3.50.

If the author himself had not put a post-script to his preface, the first duty of any reviewer would be to object violently and quite properly to the inclusion of so many plants that have nothing to do with rocks. It is wearisome to find Mr. Preece begging the question of the wording of the title when it might so easily have been *North American Plants for Rock Gardens*.

The foreword of the interesting book comes temperately from the pen of Mr. Montague Free, who points out that the cultural directions have to be interpreted. One looks quickly to see if this is another book from England, but it is not—only from British Columbia, which needs its own interpretation.

The book is an A to Z book with one page of text to face a full page illustration, a very neat bit of planning and a fine advance in publishing. There are one hundred subjects. Mr. Preece is not altogether convincing in the choice of his hundred, especially when of the first plant is said, "It is likely to be a number of years before this treasure becomes available for general distribution."

The texts, for the most part are admirable. They have always a note about the native habitat. The description is cut short because the illustration gives the details of form

and habit. The cultural notes are suggestive rather than final.

The illustrations vary in quality. Far too many are slightly out of focus. Some are sunk in darkness and some have wrong color values or lack of definition. In spite of all the difficulties attendant on the photographing of flowering plants, it is to be hoped that the next hundred will be more uniformly excellent.

A Country Garden. By Ethel Armitage. The Macmillan Company, Inc., New York, 1937. 226 pages, illustrated with wood cuts by John Farleigh. \$3.00.

This is a beautiful book, conceived as a printed whole with the nicest relation between Mr. Farleigh's engravings and the printed page. The engravings are chaste and rather hard with more attention to blacks and grays than is found in old herbals so that this is in no sense an imitation.

The text is arranged by the calendar year with entries for many days, but not for all. It is a literary rather than a garden book, approaching a diary-like composition with observations, comments, reminiscences and the like. The locale is England. For some readers rich in experience it will open a thousand doors, for others it will be only a passing record of delights.

Leaves, Their Place in Life and Legend. By Vernon Quinn. The Frederick A. Stokes Company, New York, 1937. 211 pages, illustrated with drawings and decorations by Marie A. Lawson. \$2.00.

This is almost a companion volume to Mr. Quinn's book on Seeds, reviewed before. It has the same ex-

quisite drawings and the same interesting contents.

One has the feeling that neither this book nor the book on seeds would have been written if the author had not discovered the old herbalist's works and pored over them. For anyone who has browsed in such books, many passages here are familiar so that one meets the writer's enthusiasms with equal fervor.

For convenience, of course, the bits of garnered lore and fancy have been arranged in chapters, some more compact and succinct than others, but none so arbitrary that one cannot read on from cover to cover with pleasure. As a source book it cannot be taken seriously, as a reference book it may not stand alone, but as a book for pleasurable reading it should endure. If it may also serve to awaken gardeners to the many pleasures that could be theirs outside of the more immediate labors of gardening, it should make a permanent place for itself.

How to Grow Roses. By J. Horace McFarland and Robert Pyle. The Macmillan Company, New York, 1937. 192 pages, illustrated. \$1.00.

"Only the title of this book is old." It has been rewritten by the authors

who are well known in their fields and should have only the best of data at their disposal. Liberal use has been made of illustrations that have appeared elsewhere, but the choices are excellent and the reader, whether he be old or new will find all the essential matters for a safe beginning and an even safer continuation in this field that has such an elemental grip on all garden lovers.

Iris Culture for Amateurs. L. F. Pesel and R. E. S. Spender. Country Life, Ltd., 20 Tavistock St., London, W. C.2, England, 1937. 151 pages, illustrated. 5 shillings.

This is a very pleasant British addition to the small handbooks of which we have three examples in this country, from Mrs. McKinney, Mr. Wister and Mr. Rockwell. Since it is of this year, it has much in it that is of the moment just as they had when they were published. It is written for the amateur gardener and not the amateur botanist. It is full of notes and opinions about the tall bearded iris but the other groups and species are not neglected. To this reviewer the most interesting portion is that which discusses the use of iris in garden plans with the analysis of several and with supplementary lists of plants that combine happily with iris in Britain.

The Gardener's Pocketbook

Thalictrum rochebrunianum

Thalictrum rochebrunianum is a meadowrue from Japan. All the meadowrues I have known are attractive plants for the garden, if only used for their foliage, so like a large-leaved maidenhair fern, and much more durable. Some whose flowers are inconspicuous, such as *T. dioicum*, are used in the borders amongst flowering perennials or annuals whose flowers are conspicuous and the thalictrum is cut back when it commences to bloom and the plant becomes top heavy to a foot or more to make a charming billowing setting for bolder flowers.

So when *Thalictrum rochebrunianum* came my way, it was placed along the middle center of a border and watched with interest. The description said, "An herbaceous perennial with handsome compound foliage and terminal heads of large lavender flowers rather more showy than those of *T. dipterocarpum*." Knowing the variability and decided undependability of *T. dipterocarpum*, this new meadowrue was watched with some misgivings, as *T. dipterocarpum* had never stayed in the garden long; even an annual lifting and snugly tucking away in a safe cold frame had not kept it more than two or three winters.

This *T. rochebrunianum* was a tiny thing when it arrived and a cold day in March when it was placed in the border. It grew quite strongly and when about three feet high flowered daintily; its lavender bells, with yellow centers (really its cluster of stamens) though small (only four or five tiny but bright lavender petals) were set on wiry lavender colored stems, the whole forming a large head, very effective.

This spring, its second year in place, it came up strongly, rearing its pale lavender stalk to quite a foot before it broke out its first leaf bract; it then continued to ascend to quite another foot, eleven inches, by actual measurement, before another leaf bract appeared in pairs on each side of the stem. Like Jack-and-the-Beanstalk, it continued to go upward in this manner until finally the flower heads appeared in July, the tiny balls remaining tightly closed for some days until now on July 20th it is in full flower and the entire plant measures thirteen feet from ground to tip. It is an interesting and beautiful plant, though would be much more effective backed by a darker background than I have given it—against an evergreen, in hedge or border, it would be quite arresting, as its stem or stalk is of this odd pale lavender color and about as thick as a man's finger; it shows no sign of sending up more than one stem, so its stateliness is indisputable.

It should be moved—such is the gardener's usual thought when hunting the perfect spot for a certain treasure—yet I fear doing it as it is now of such good growth, so the next best thing, and often the wisest, is to gather and sow the seed as soon as ripe. The seed of thalictrum is hard for me to germinate (should it be left in its three cornered husk, or should this be removed?) and the contents are so minute, one wonders if one has the seed at all or only a black cinder. I shall do both—plant in hull and husk some, though to speak of its husk suggests an ear of corn, and not the fairy size of this seed pod. Other thalictrums I have grown, and more I have collected from self-sown seed



Lilian A. Guernsey

Agastache cana

[See page 268]

in the border, but this *T. rochebrunianum* must have careful care, for it is Japanese and immune to the terrible Japanese beetle which is now here in its worst scourge.

I feel this strongly, having just been out to inspect this thalictrum, and saw next it a tall exquisite pink hollyhock, each flower filled to overflowing with these wretched though beautiful bronze creatures. The tea roses also, though sprayed, have each bud and flower black with them. It is so maddening that one would fain rend this thalictrum of Japanese origin which the beetles do not touch, from national feeling, no doubt. But sanity and brotherhood must prevail, and I am soberly grateful for one plant at least, along with the petunias and the very few others that the beetles do not devour.

F. E. McILVAINE.

Downington, Pa.

A Dilemma and a Question

The Japanese beetles have descended again "like wolves on the fold and their cohorts are gleaming in bronze and in gold," if paraphrasing the old poem may be forgiven,—and like the locusts they devour everything, so though we whitewash our plants with lime and arsenate of lead, they constantly find some new succulent leaves to chew.

My query is, "is it any use to leave some plant-weeds as traps, or does this simply serve to collect more beetles to that spot, so that the last stage is worse than the first?"

To illustrate: *Oenothera biennis* (evening primrose) and *Impatiens pallida* (jewel weed) both occur in quantities in and outside the flower garden. They were encouraged to stay at one time, for their flowers—some of the oenothera being very large, pale

yellow and beautiful at night, while the *Impatiens* was always a favorite "weed" since childhood, when we delighted to watch the leaves turn to silver when submerged in the pool. But with the arrival of the Japanese beetle, it soon became apparent that these two plants were the especial choice of their appetites. Both species were covered with beetles until reduced to skeletons. The question then arose, "shall they be kept in the garden as traps for the beetles," but now after several years I begin to wonder if this free lunch for them does not constitute a danger. All the beetles cannot be collected in the buckets of kerosene and water, though one goes out three times a day after them. Do not these traps bring more beetles into the area than if they were absent? I have never put traps about, as this was proved to bring more beetles in, but have I not committed the same mistake in allowing these "host" plants to stay? Certainly the beetles are worse this year than ever before—they are all over the apple trees now, all the cherries and lindens, etc., are reduced to brown lace, or denuded of their leaves entirely. To the farmer, who cannot afford to spray for this new pest, it is a serious loss, and to the gardener, who tries to paint with nature in flowers, fruit and foliage, it is as serious, though only an aesthetic loss.

F. E. McILVAINE.
Downington, Pa.

Quercus Robur var. *pectinata*. (See page 267)

Along one of the broad terraced slopes toward the Hudson River from the summit of Downing Park in Newburgh, New York, is a specimen of the cut-leaved English Oak interesting both for its variously divided leaves



[See page 266]

Quercus Robur var. pectinata

and for its outline, a wide-spreading, low-topped tree. This is but one example of many that may be found in old gardens and parks from the rich and varied list of plant materials available to the landscape artist of the middle and latter part of the last century. It is interesting to note that spade work is being done here and there, as in the work of Leon Croizat in New York City, for an index of the plants persisting from our golden age of plant materials. The firm of Vaux and Olmstead contributed their work in the design and planning of Downing Park as their part toward the memorial to Andrew Jackson Downing, with whom Calvert Vaux had been associated as a partner.

The wide variability of *Quercus robur* has been commented on many times. Thomas Meehan in 1882 wrote of variations in seedlings from acorns gathered in Germantown, Pa., particularly in length of leaf stalks and in form of leaf from entire as a chestnut oak to pinnatifid. However, a few seedlings from acorns of the var. *pectinata* at Newburgh produced only normal-leaved English oaks.

Elwes and Henry in *Trees of Great Britain and Ireland* state that var. *pectinata* is a natural form found in the mountains of southern Germany and distributed by a nursery firm of Hamburg.

BERNARD HARKNESS.
Baraboo, Wisc.

Iris unguicularis

An old but too seldom seen member of the iris species is *Iris unguicularis* (*I. stylosa*). It is a native of Morocco and thrives in drought ridden and hot summers. Furthermore, it is hardy, having withstood 12 degrees below zero in my garden in a well drained but exposed position under the eaves on the southwest side of my house, with a covering of small quantity of rye straw to prevent the blossoms being spattered by rain. Many people have the misconception that it is not hardy because they think of Morocco as having mild weather the year around, not knowing that although the summers are long and hot and dry there are places in the Atlas Mountains where there are short severe winters and deep snows sufficient for winter sports. It is during the winter season that this iris stores up moisture and blooms there and in this country with the first appearance of a few warm days. It should be planted in a well drained location containing lime or lime rubble, and has grown equally well for me in light or heavy soil as long as well drained and protected from the north winds. The flowers are lavender blue on 6 to 12 inch stems with the fragrance of a sweet violet and should be picked while in bud and brought into the house, where they immediately open, scenting the entire room and lasting for two or three days. In appearance they resemble giant Dutch crocus before opening.

In my experience August and early September is the best time for transplanting for this section of the country. Last winter being very mild, with scarcely any severe freezing weather and abundance of rain, this iris bloomed profusely from January 1st to April 15th, except for a short pe-

riod in March during a severe freeze and sleet storm. In more severe winters the blossoms appear with the first warm day in February and sometimes in January, continuing in bloom, except during several freezes, until mid-April. Several forms of this iris exist, one of them being a rare white and gold form.

ROBERT C. MONCURE.
Alexandria, Va.

Aquilegia longissima

Aquilegia longissima is a much heralded native of Mexico, Texas and other portions of the Southwest, having received an Award of Merit from the Royal Horticultural Society. It appears to be thoroughly hardy if given a well drained position and deep root run for its large root system and is drought resistant like *A. chrysanthia*. Large yellow flowers with fantastically long spurs 4 to 5 inches long, always hanging down, are borne on 2 to 3 foot stems, having a greenish hue when partially open but opening to a beautiful soft yellow with a distinctive and elusive fragrance and exquisite poise. I counted forty-five blossoms and buds on one plant. This aquilegia has a blooming period of from three weeks to a month, beginning early in May. Few flowers can boast of such a successful blending of strangeness and great beauty, as well as ability to withstand zero weather. In mild winters the foliage is retained and varies in color from purple to maroon, presenting a welcome picture of color in the border or large rock garden.

ROBERT C. MONCURE.
Alexandria, Va.

Agastache cana (See page 265)

This plant that is sometimes found in herb gardens where there is a chance to carry it over with protec-



Lilian A. Guernsey

Hymenocallis Amancaes

[See page 270]

tion in the winter is native of our southwest with a range extending south into Mexico. So far no particular tests have been made of its hardiness as far as can be found, but there is always the chance that with a well drained soil and good ripening of autumn growth, it might prove hardier than is supposed.

The plants from which the illustration was made were raised from seed gathered near El Paso, Texas. Treated very much as one might treat any of the sub-shrubby or shrubby sages, the young plants grew well enough and in their second season came to good flowering in late August and early September. The contrast between the gray green leaves and the soft rosy-red flowers is very pleasant, but the particular appeal of the plant lies in the mixed scents that arise from the leaves when bruised and from the flowers themselves. The leaf odors recall both mint and sage, although they partake but little of either. The flower scent is sweet and faintly lemon as well, and as the perfume of the flower seems to come and go in strength, it makes rather an extra scent for the foliage.

The plants are by no means equal in vigor or strength and so make a rather irregular clump in a planting. Their color values, moreover, are so gentle that the plant must be considered only as a secondary note for the mixed border.

In sunny and dry walls, it might be worth a trial as a secondary shrub to give vertical accent to the usually more rounded masses of iberis, helianthemum and the like.

Hymenocallis Amancaes. (See page 269)

Among its fellows this stands unique in that its flowers are not white but a

clear golden yellow. It is, however, one of the species least often seen, which is curious in that it is said to be abundant enough near Lima, Peru, on the hills that give it its name.

The photograph shows the difference in the floral parts with the shorter perianth segments, the greatly developed cup and the inflexed stamens free above the green stains that mark their growth.

There is an excellent plate of this in Curtis Botanical Magazine (1224) for 1809 with which is recorded the information that it was "lately imported from the Brazils by Messrs. Middlemist and Co., Shepherd's-Bush, in whose hothouse it flowered, for the first time, this summer."

These same data are reported in the Botanical Register (tab. 600) but their figure was drawn from "a plant in Mr. Griffin's hothouse at South Lambeth, where the species is cultivated with great success, and produces flowers and seeds every year. The figure in the Botanical Register shows a portion of the leafy shoot that shows clearly enough the very different appearance of the leaf bases from most hymenocallis with a marked difference in the color of the surfaces and almost a sheath-like base.

Baker's Amaryllideae (p. 129) states that the description there was made from plants that flowered at Kew, June-July, 1878-9.

It seems curious that so striking a plant, particularly one that is not rare in its native land and that will fruit in cultivation, should not be more abundant. Possibly the explanation lies in the fact that the usual procedure for the cultivation of hymenocallis, rich, moist soil, may be the exact opposite of what this requires, for at Lima the annual rainfall is scarcely an inch and the plant must



Lilian A. Guernsey

[See page 272]

Hymenocallis caribaea

depend for soil moisture upon this and whatever may condense from the continual fogs. Evaporation, on the other hand, is slight for the temperature range is not great.

Hymenocallis caribaea (See page 271)

In some cities, perhaps in almost any city it is interesting to watch, as one travels about in summer, and to discover what plants are used as pot plants, not by those persons who look upon potted plants as part of interior decoration, but as part of family living. This latter collection often is less in the mode than the former, but as a compensation often contains plants that have become rare through their very unfashionability.

In our town there are several plants, tender to cold, that appear with great frequency, among them several *hymenocallis* that are kept in constantly increasing pots summer after summer, yielding their rank stalks with tattered flowers of that same strange milky-whiteness that one finds in the flowers of the moonvine. The more common species is *H. littoralis* but there are often enough tubs of *H. caribaea*, the subject of our illustration.

Each bulb sends up many strap-shaped leaves and each offset almost as many. From the strongest rise the stiff flower-scapes that barely over-top the leaves. In the flower head are many flowers with the cylindric perianth tube, the long flexuous perianth segments, and the web-like membrane that unites the bases of the stamens like a cup of singular delicacy.

Like many other plants from this side of the Atlantic, this species was taken to Europe long ago. In Curtis Botanical Magazine for 1805 there are three successive plates of species in this genus, *littoralis* from the tropics,

caribaea from the West Indies and *rotata* from our continent, the last the most spectacular because of the width of the inner cup.

Unlike the English gardeners, we need not waste space for these in the warmest conservatory, but grow them out-of-doors in summer and store like dahlias in winter if need be. A well-drained soil with plenty of good humus and water during the growing season is all that seems needed.

Hippeastrum calyptatum (See page 273)

Edwards' Botanical Register, t. 164, gives a good colored plate of this unusual species with its flower form so markedly different from that of the more familiar species and strains. The coloration in the particular volume is a much darker green than that of the plant from which our illustration was taken. The general color impression of the flower is of an ivory white bloom more or less tinted with a yellow green that deepens in intensity toward the mid rib. If one holds a Ridgway chart behind the flower, he will find the color range lies among the colors on plates XVII and XVIII perhaps best in the series from white to dull green yellow with an accent of universal green of plate XVIII. The filaments and style are tinted with a faint pink in our plant much less markedly than in Edwards' figure.

In Baker's Handbook of the Amaryllideae (1888) p. 47 this species is clearly if briefly described, but no special mention is made of the one character that is most conspicuous to the person seeing the plant for the first time, namely the markedly incurved outer perianth segments that almost touch in the middle of the flower. The "incurved corona" that almost



Lilian A. Guernsey

[See page 272]

Hippeastrum calyptatum

closes the throat of the tube is very conspicuous but can hardly be shown in a photograph, but the conspicuously exerted stamens and style are quite apparent.

The illustration in *L'Horticulter Universel* (Vol. II, p. 4, 1841) differs even more in that the tonality in green lies with the blue rather than the yellow greens. The text points out at some length that the French plant has flowered for years and always quite green, as in the figure in *The Botanical Register* and quite without spots and markings of purplish red as is permitted by the first description.

The several texts agree that the bulbs were first sent from Brazil by a Mr. E. Woodford to a Mr. Griffin, whose hothouse was in South Lambeth. They also speak of the flowering as in the autumn which is the same as this of our plant that flowers with its leaves in full growth.

Lonicera Sempervirens (See page 275)

To find the trumpet honeysuckle in our open woods was once a pleasure for the gardener who walked out from town, a pleasure far greater than the sight of this plant in gardens where so often the gardener fights a losing battle with the armies of green aphids that enjoy it so keenly. Now it is no longer abundant hereabouts, though it is not a rare plant elsewhere.

Perhaps because it was never quite suited when transplanted, the vine never made more than moderate growth with woodier stems and less twining branches than the Japanese honeysuckle.

In any case it was always a plant for enjoyment and remark, first for its connate, even perfoliate leaves, second for its tubular orange-scarlet flowers to which the hummingbirds

came in season and finally, if good fortune attended in the fruiting which is illustrated from a better garden than my own. Fruiting is not always so good as this but one can easily see how decorative might be the sprigs with orange berries and nearly evergreen leaves, darker on their upper surface than on their under surface which sometimes is almost gray.

Although it will climb through a trellis, one thinks of it almost as a weak shrub for the edges of open woodlots or the margin of a shrubbery, from which one might pick in passing a sprig of bloom, or a spray of berries.

Colchicums

For some years the only colchicums that had been in gardens hereabouts were the familiar forms of *C. speciosum* which are all very well but which never have given the thrill that comes from the autumn-flowering species of crocus. This year there was an opportunity to see the flowers of *C. sibthorpii* and of the curious plant that used to be *C. Parkinsonii* and one can easily see why collectors can wish for other species of this genus. The plants had had the usual sheaf of leaves through the season, with the more interesting ones of *C. Parkinsonii* more spreading, wider, bluish green with undulate margins. The flowers of this latter are flatter with a definite checker-pattern, not so clear or so delicate as one could hope for from the old *Curtis Botanical Magazine* plate, but nice enough. The flowers of the former are huge like great goblets of the rosiest color with their checkering that becomes less clear as the flower ages and the color becomes intensified. One wonders if there will be seeds as there sometimes are on the familiar species and how long it will be before the seedlings come to maturity.



Lilian A. Guernsey

Lonicera Semperflorens

[See page 274]

A Chance to Save the American Chestnut

There is a chance that the American chestnut may yet be saved. Dr. G. A. Zimmerman of Harrisburg, Pa., is an M. D. with a keen and intelligent side interest in horticulture. For a number of years he has been carrying on experiments in immunizing chestnuts against the blight by a process almost exactly like that by which we vaccinate to protect ourselves from smallpox and typhoid.

The results secured thus far are very encouraging and Dr. Zimmerman is very anxious to secure the best possible remaining stocks of American chestnut before the blight kills them. Therefore he is offering prizes for the largest nuts with the idea that when the trees have been found he can get scions before next spring and thus try to perpetuate the good trees.

He is giving a number of prizes, as follows:

First prize.....	\$15
Second prize.....	10
Third prize.....	5
Fourth prize.....	3
Fifth prize.....	2

Fifteen sixth prizes \$1 each.

Nuts should be sent to Dr. G. A. Zimmerman, 32 S. 13th St., Harrisburg, Pa., as soon as they are ripe. Senders should be very careful to have their names on the package and in it and the tree should be carefully marked for future observation and securing scions, as the willingness to furnish scions is the one condition for entering the contest. The identity of prize winning trees should be certified by local farm agent or some other government official.

This is an important service which those who know their fence rows and woodlands may render the American nation.

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